May / 1959
VAL 3475

PMCA Production
Conference Report:

Properties of pectin which affect its use in confectionery

A new edible, nutritive, protective glaze for confections and nuts

Quality control: chocolate

Starches for the candy industry

the *Manufacturing Confectioner*

specialized publication for confectionery manufacturers

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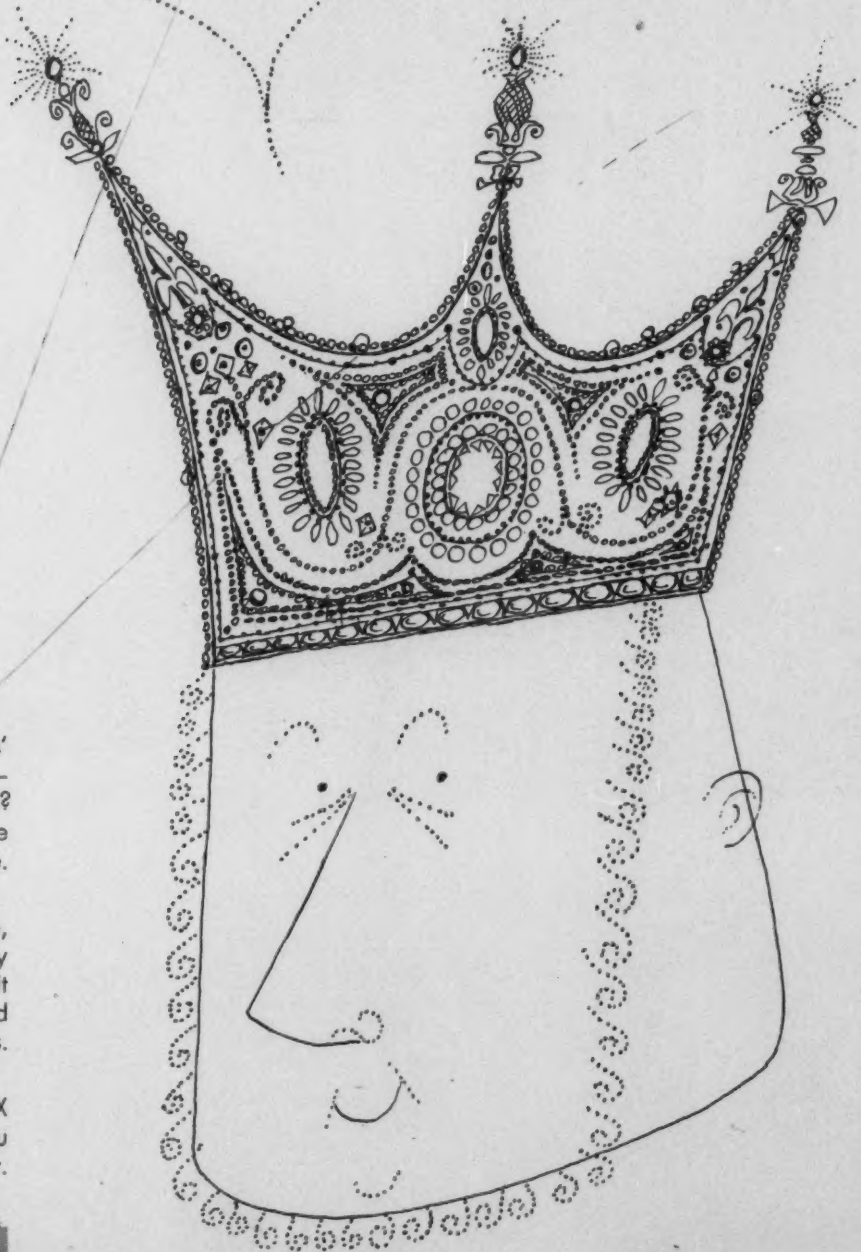

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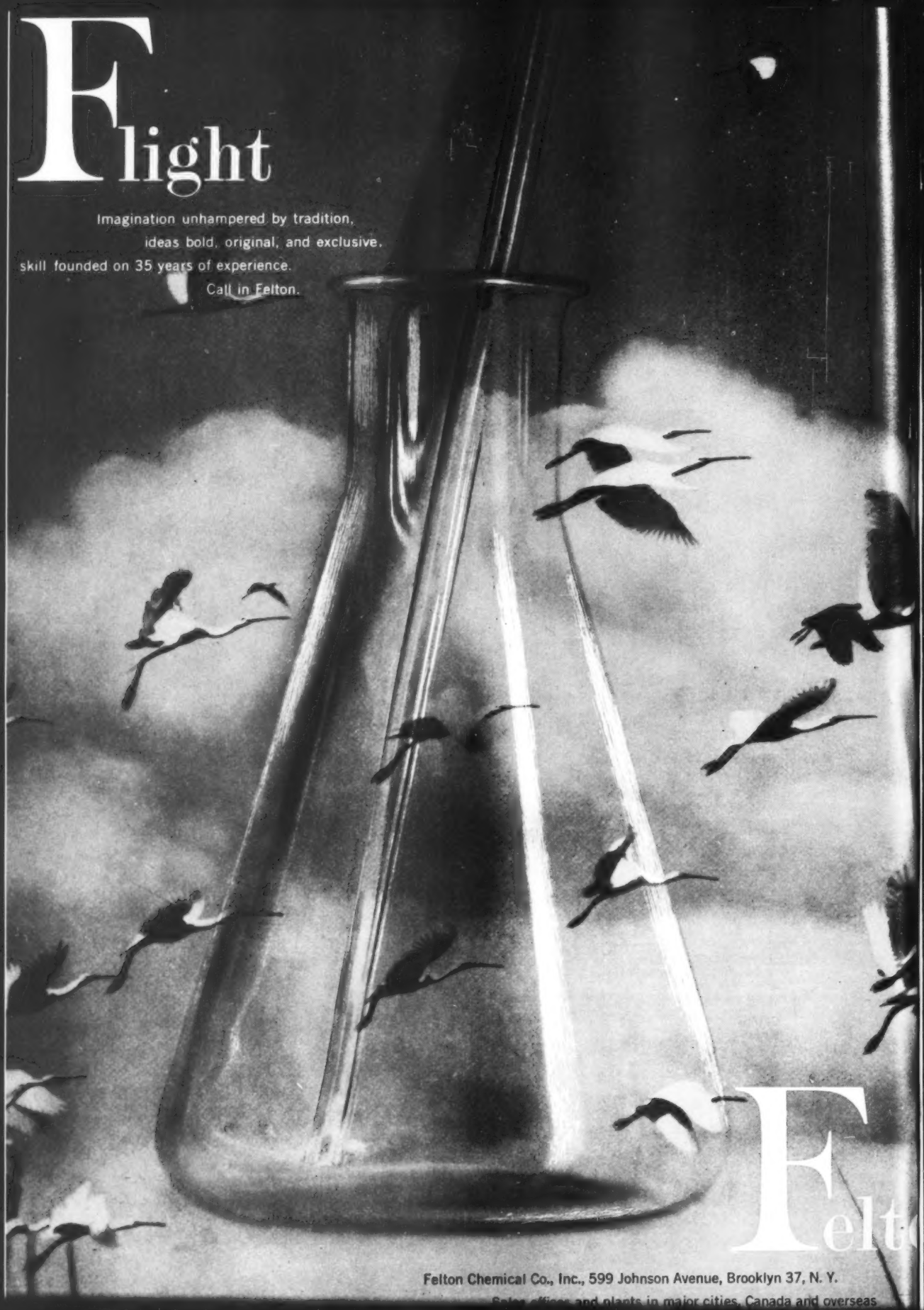
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New Gen. Mgr. at Cole

George McLaughlin, formerly a special sales manager for the Howard Johnson candy departments, has been named general manager of Cole Chocolate Company, Boston, Massachusetts. Cole is a wholly owned subsidiary of Howard Johnson. In addition to manufacturing Johnson's chocolates it also manufacturers private label brands including S. S. Pierce and Huyler's.

Schrafft names new P. A.

Gerard E. Mulranan has been appointed purchasing agent of W. F. Schrafft & Sons. Mulranan has been with the firm for 32 years.

Alton Prods. names VP

R. K. Swanson has been named a vice president and general manager of Alton Products Corp., Addison, Illinois, manufacturers of Virginia's Caramel Corn. Mrs. A. J. Villiesse was named secretary and Mr. R. W. Nelson, treasurer.

Southeastern AACT officers

The following officers were elected for the year 1959-1960 at the March meeting of the Southeastern Section of the American Association of Candy Technologists: Neil Murphy, Crown Candy Co., chairman; Fred Sealy, Jr., Johnson-Fluker Co., vice chairman; Frank Ison, Jr., The Ison Co., secretary; George Jenkins, Brock Candy Co., treasurer.

Banana products for candy

The American Home Foods Division of American Home Products Corp. will market 100 percent pure mashed banana products under an agreement with the United Fruit Company. Sold under the "Chiquita" brand the products will require no freezing or refrigeration and are canned by a new process which will provide a stable, convenient form of pure bananas for use by confectioners and other manufacturers.

Chocolate Mfgrs. Assoc. elects

E. Burke Giblin, operations manager of the Jell-O division of the General Foods Corp., was elected president of the Chocolate Manufacturers Association of the United States of America and chairman of the American Cocoa Institute of America at the annual meetings of the two organizations on April 7-8 in New York City. John P. Woodward, president of the Klein Chocolate Company, was elected vice president of the Association and vice chairman of the Institute.

New NCA members

The National Confectioners Association has announced the acceptance of three new active members: MacFarlane's of Southern California, Inc., Boyer Bros., Inc., Altoona, Pa., and the Chocolate House of Milwaukee.

Mars introduces 15 cent bars

Milky Way, Snickers and 3 Musketeers are now available in one piece, 15 cent sizes. The three bars are packed in 96 count cases and are being introduced especially for theatre concessionaires.

Necco names banker to board

George L. White, president of the Newton, Waltham Bank & Trust Company, was elected a director of the New England Confectionery Company at the annual stockholders' meeting.

Conventioneers may win a car

A 1959 Ford Galaxy Sunliner convertible will be presented to a lucky candy manufacturer registered at the 76th annual National Confectioners Association convention, June 7-11, in Chicago. Other prizes to be awarded include a trip for two to Paris and a motorized golf car. The Paris trip will be awarded to a conventioneer attending the Sunday-Get-Together and the golf car will go to an NCA active member at the golf tournament on Monday, June 8. The Ford Galaxy will be displayed at the exhibition hall in the Conrad Hilton Hotel and attendance at the exhibition will be required in order that a registrant be eligible to win the automobile.

Other news of the convention comes from the committee arranging the joint technical session of the NCA and the American Association of Candy Technologists. Plans for this program which will be held in the Metallurgy and Chemical Building on the campus of the Illinois Institute of Technology, 3200 South State Street, are now complete. The morning session will include talks by Dr. Guy Woodroof of the Georgia Experiment Station; Dr. Fredus Peters, director of research, Quaker Oats Co.; Douglas W. Quirk, New Products Division, Hotpoint Div. of General Electric Co.; R. O. Feuge, Southern Utilization Research and Development Div. of the U. S. Department of Agriculture and James D. Yates, chairman of the board of the Martin Driscoll Co. After a luncheon and business meeting (at which the Stroud Jordan medal will be presented; buses will return those in attendance to the Conrad Hilton Hotel.

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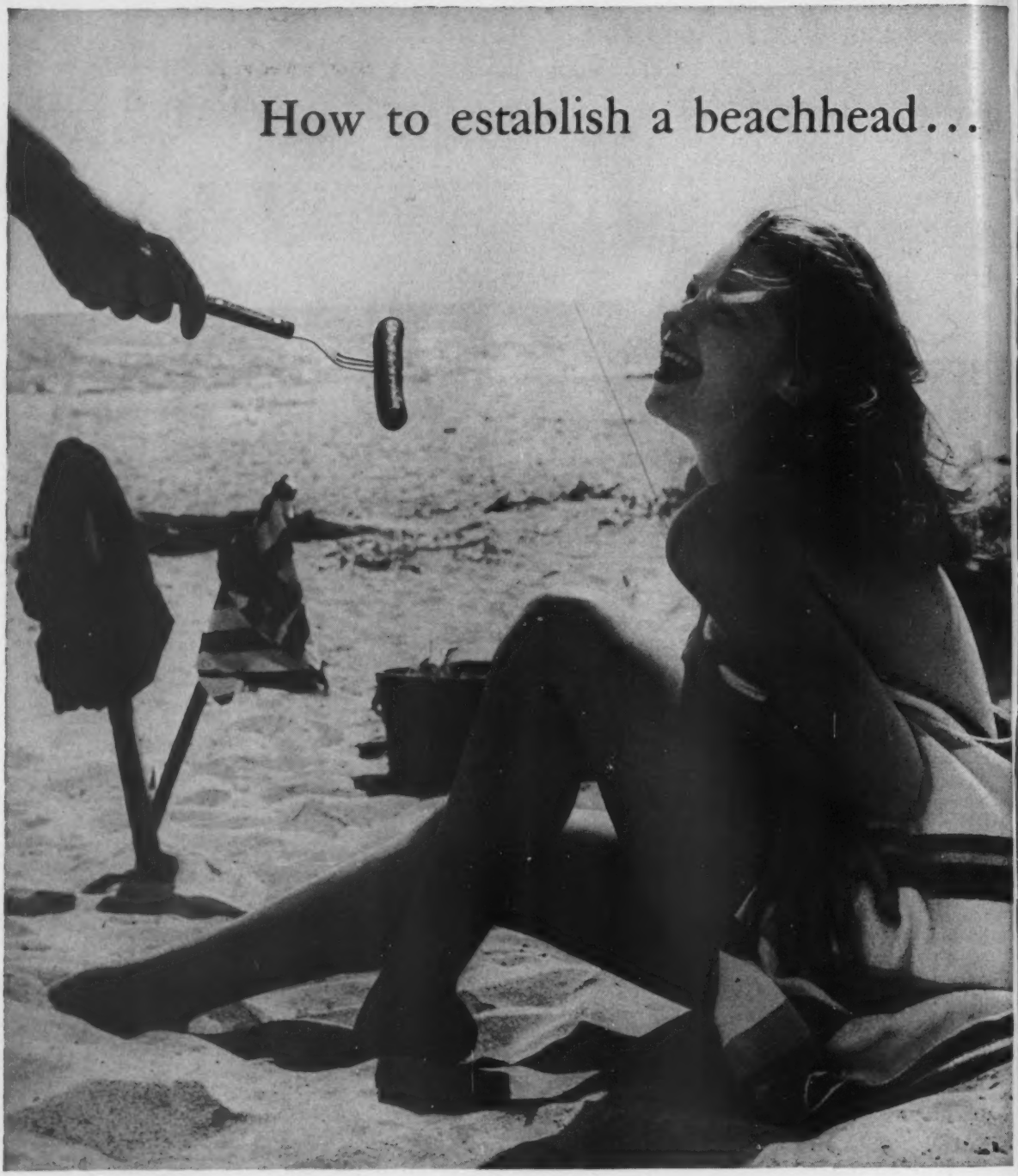

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House considers import bill

A measure to reduce imports of confectionery and chocolate products to conform to quotas imposed by foreign countries is being considered by the House Ways and Means Committee. In effect the bill would establish a reciprocal import quota against a foreign country when similar products imported from the United States are subject to quota limitations.

Easter eggs displayed

Thirteen manufacturers of Easter cream eggs displayed their handiwork the week before Easter the window of the Western Saving Fund Society in Philadelphia. The elaborately decorated eggs were sized from 25 pounds to a 208 pound giant made by S. Zitner. This is the second year that the Philadelphia manufacturers have sponsored this display which is seen by approximately a quarter of a million people a day at this busy corner. The program was handled by Larry Blumenthal of Blumenthal Chocolate Company, president of the Philadelphia Association of Manufacturers of Confectionery and Chocolate and the following companies were represented: Heidelberger Confectionery, Plantation Nut and Chocolate, Loft's, Minter Bros., Shellenbergers, Victorian Candy Co., Miss Martin's, S. Zitner, Marquetand's, A. Steppacher & Son, Eastern Candy Co., Lerro's Candies and Carl Miller.

Leaf honors Ginsburg

Paul Ginsburg, director of purchasing for Leaf Brands, Inc., has been honored upon the completion of 25 years of continuous service to the company. The watch which he was to receive was presented at his request to his wife, Pauline, for her "understanding and consideration."

Schrafft bows on Paar show

W. F. Schrafft & Sons is making its national television debut on the Jack Paar show on NBC. Commercials will be carried from April 24th through Christmas. Mr. William Silverman, vice president of Schrafft's, commented that the success of the company's spot TV, Valentine's Day promotion this year was responsible in part for their decision to use the medium on a national scale.

Candy Sales Zoom

Dollar sales of confectionery for the first two months are 11% ahead of a similar period last year, and poundage is up about 4%. The heaviest gainer is the class of packaged goods retailing from 50¢ to 99¢ per pound.

Item	Estimated sales of current month and comparison: February 1959 ($1,000)	February 1959 from February 1958	Estimated sales year to date: 2 months 1959 ($1,000)	Percent change from 2 months 1958
Confectionery and competitive chocolate products, estimated total..	104,338	+11	212,858	+11
By KIND OF BUSINESS				
Manufacturer-wholesaler	81,370	+11	170,562	+11
Manufacturer-retailers[1]	10,047	+19	16,300	+20
Chocolate manufacturers	12,921	+8	25,996	+7
TOTAL ESTIMATED SALES OF MANUFACTURER-WHOLESALERS BY DIVISION AND STATES				
New England	8,792	+8	19,834	+6
Middle Atlantic	25,888	+16	55,637	+20
N. Y. and N. J.	14,416	+13	28,865	+19
Pa.	11,472	+20	26,772	+22
East North Central	31,562	+11	63,798	+11
Ill.	28,266	+11	57,115	+10
Ohio and Ind.	1,928	+34	3,481	+22
Mich. and Wis.	1,368	([2])	3,202	+7
West North Central	2,967	+3	5,764	−3
Minn., Kan., S. Dak., and Neb.	1,998	([2])	3,853	−7
Iowa and Mo.	969	+9	1,911	+7
South Atlantic	3,287	+18	6,829	+11
Md., D. of C., Va., W. Va., N. Car., and S. Car.	1,504	+45	2,854	+28
Ga. and Fla.	1,783	+2	3,975	+2
East South Central: Ky., Tenn., Ala., and Miss. ..	1,424	+3	2,955	+2
West South Central: Ark., La., Okla., and Tex.	2,361	+4	5,571	+1
Mountain: Ariz., Colo., Id., N. Mex., and Utah	867	+27	1,771	+16
Pacific	4,222	−10	8,403	−9
Calif.	3,468	−9	6,624	−11
Wash. and Ore.	754	−13	1,779	([2])

[1]Retailers with two or more outlets.
[2]Less than 0.5 percent change.

Type of product[1]	February 1959: Pounds (1,000)	February 1959: Value ($1,000)	2 months: Pounds (1,000) 1959	2 months: Pounds (1,000) Percent change from 1958	2 months: Value ($1,000) 1959	2 months: Value ($1,000) Percent change from 1958
TOTAL SALES OF SELECTED ESTABLISHMENTS	115,441	47,466	235,075	+3	100,094	+8
Package goods made to retail at:						
$1.00 or more per lb..	3,750	4,182	10,018	+4	12,516	+8
$0.50 to $0.99 per lb.	11,324	6,292	23,920	+16	13,350	+24
Less than $.50 per lb.	18,954	4,903	35,622	+8	9,372	+10
Bar goods	54,054	22,876	108,312	−1	45,781	+4
Bulk goods[2]	17,756	4,958	37,039	−1	10,267	+6
5¢ and 10¢ specialties	9,603	4,255	20,164	+5	8,808	+10

[1]A selected group of large manufacturer-wholesalers and chocolate manufacturers report sales by type of product. Companies reporting such detail account for approximately half of the sales of manufacturers.

[2]Includes penny goods.

Data from monthly "Facts for Industry" of the U. S. Department of Commerce.

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The sweet and the sour

Hans Dresel, founder of the PMCA production conference, and chairman since its inception thirteen years ago.

S. F. Hinkle, president of Hershey, called him "PMCA's answer to atomic energy", which is just the latest of a very wide range of epitaphs that have been tossed at Hans Dresel in the past thirteen years of his organizational work in the candy industry.

An enumeration of these epitaphs would range from the highest compliment, bordering on adoration, to the grossest insult. For if anything can be said of Hans with certainty, it is that he is not looked upon by anyone with placid disinterest. He evokes strong reactions because he has strong feelings, and expresses them in definite and positive statements.

This is the inevitable fate of anyone who upsets the status-quo, and this Hans has certainly done. The industry will never be the same, for which a great majority of the men in the industry are profoundly grateful. The Thirteenth Production Conference of the PMCA, just completed, is ample evidence that a tradition of cooperative technical effort in this industry is here to stay. Not coincidently, this tradition began, in an organized and meaningful way, just thirteen years ago.

If and when kudos for the development of this tradition get passed around, it will be Hans Dresel who will get the lion's share. *SEA*

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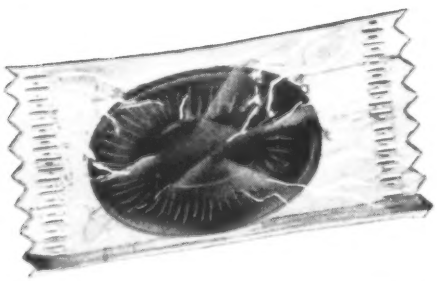

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the Manufacturing Confectioner

May, 1959

Volume XXXIX—Number 5

PMCA PRODUCTION CONFERENCE

Properties of pectin which affect its use in confectionery

by L. C. GALLAGHER
Manager Industry Sales Division
Sunkist Growers

To the layman, pectin is the gel producing substance in fruit. To the chemist it is a partially methoxylated ester of polygalacturonic acid. There are a number of pectic substances all of which have for their building unit D-galacturonic acid.

In nature the simple sugar galactose is readily oxidized to produce D-galacturonic acid. When linked together with the loss of water, a chain of anhydrogalacturonic units (polygalacturonic acid) is formed.

Next in this series of pectic substances is one in which there is partial neutralization of the acid groups to form the methyl ester. It is the one of greatest commercial importance which we know as pectin because it is capable of forming gels of water when sugar and acid are present in the correct proportion. Continuing up the ladder in molecular size of these pectic substances is the parent pectic substance protopectin.

In nature we find the pectic substances in exactly the reverse order in which I have listed them. In the green fruit protopectin occurs almost universally along with cellulose which together form the structural system of the fruit. As the fruit ripens, enzymes and fruit acids alter the protopectin molecule converting it into units which are water soluble acids of varying methyl ester content and degree of neutralization which are capable of forming gels of water with sugar and acid. These are the units which are extracted from the fruit, standardized and are sold as pectin.

The pectin molecule may be treated with acid, an alkali or an enzyme to strip a substantial portion of the methoxyl groups from it. This results in a modified low methoxyl pectin which also is capable of forming a gel but under different conditions than required for the ordinary high ester pectin. The low methoxyl gels are not dependent upon sugar content. They have a relationship to pH (acidity) but are not quite so dependent upon it as are the regular high ester pectins. The low methoxyl pectin gels are, however, completely dependent upon the presence of a polyvalent metallic ion such as calcium.

While the principal field of usage for low methoxyl pectins is in the low sugar gels, this property of pectin is important because the presence of the slightest percentage of low methoxyl pectin in a high ester pectin may make it quite sensitive to calcium or other alkaline earth metals which may be present especially in hard waters and which can greatly alter its properties as well as the pectin's solubility. Furthermore, the type of low methoxyl pectin present in the pectin can be a factor. Demethoxylation due to enzymes, acids or alkalis all result in pectins that differ in their sensitivity to calcium and in viscosity.

Complete stripping of the methoxyl groups from the pectin molecule produces what we formerly called pectic acid and which now we know to be

more correctly described as polygalacturonic acid. It is water insoluble but various of its salts are soluble and can produce gels under certain conditions.

This brief description of the chemistry of pectin and its relationship to the other pectic substances is at first glance unrelated to the manufacturing of pectin confectionery jellies. However we believe it does contribute to greater understanding and is helpful when considering some of the problems encountered by the candy maker.

First there is the matter of solubility. Practically all of the pectic substances are insoluble in water except for the methoxylated ones, namely pectin and low methoxyl pectin and some of the pectates. Small traces of low methoxyl pectin may be partially insoluble in extremely hard waters, especially if it is low methoxyl pectin of a type that is extremely sensitive to the presence of calcium or other alkaline earth metals present in the water. Some pectins may be quite high in mineral salts and these can affect the solubility of pectin as well as the viscosity of the pectin sol. In fact a very important characteristic is viscosity. The candy batch has to be cooked to a high temperature for a pectin solution, Brix above 80°, and low viscosity is a requirement.

Furthermore pectin is a colloid and doesn't readily dissolve in the sense that sugar or salt dissolves in water. Rather it hydrates and amount of water, time and temperature are factors in getting proper pectin solution or pectin dispersion. Pectin in the pure form has a high affinitive for water and because of this may actually clump and form a viscous mass, actually preventing its solution if not properly mixed with a dispersing agent or added to the batch with proper agitation.

From the standpoint of utility, batch pH, mechanics of operation and cooking time are important. Pectin is unstable at high temperatures in a neutral or alkaline solution. pH below 5.0 during the cook is required for stability. Too low a pH will result in high inversion of the sucrose and may cause presetting of the jelly especially if the cooking time is prolonged. Pectin solubility decreases as the sugar content increases, thus only enough sugar to act as a dispersing agent should be added until there is complete hydration of the pectin.

To produce a confectioner's jelly with all the desired characteristics which can be fitted into the manufacturing routine of the candy plant actually requires the selection of a pectin so manufactured to result in functional characteristics that are quite specific, one in which the molecular structure is rather well defined and in which there is very little contamination with other pectic substances, mineral constituents or other impurities.

At this time I would like to analyze some of the problems encountered in confectionery plants and to analyze them in the light of functional characteristics of pectin. Occasionally in plants without technical control we encounter the problem of insufficient use of water in the batch and in some cases a belief that the amount of water used may contribute to syneresis. The amount of water used is, of course, important in this respect but usually in the reverse order of that encountered. It is very important that there is sufficient water to get complete hydration of the pectin and second it is important that the cooking time be held down and the best way to do that is to get the pectin completely into solution. Once you do this, it will not take long to cook the batch to the specific temperature which of course means a definite amount of water in the finished product.

One of the dangers in any manufacturing procedure is the use of shortcuts, such a thing as if it took too long to cook the batch, in the next batch start with less water. This, of course, may be a logical conclusion if there was too much water in the first batch. However, excessive cooking time very likely may have resulted from insufficient hydration of pectin due to one or more of a number of causes each of which would very likely involve insufficient water in the batch, in which case the further reduction in the water content would only result in a poorer solution of the pectin and a complication of the trouble.

Related to this same subject is the belief that all of the sugar can be added along with the pectin. Again this is a very inefficient way to dissolve pectin and unless a great excess of water is used in the batch it will result in incomplete hydration of the pectin. Similarly, the addition of pectin and buffer salt without a portion of the acid is also dangerous because it can raise the pH of the batch especially if it is in an area where the water is quite alkaline to a point where there will be real degradation of the pectin.

The subject of sweating or syneresis of pectin jellies is frequently a problem especially in warm humid climates during the summer months. Beliefs that the amount of water used in the original batch or that breaks in the skin of the pectin candy allowing the water to escape are factors in syneresis are occasionally encountered but the real cause of sweating of jellies is to be found elsewhere. Certainly insufficient pectin, poor solution of the pectin, degradation of the pectin during the cook due to too much alkalinity or failure to cook the batch to the correct temperature are factors which can effect sweating, but under otherwise normal conditions the real cause of syneresis is the inversion of too much sucrose.

When sufficient water is used in the batch (approximately five gallons per pound of pectin) and the pectin is mixed with from five to ten times its weight of sugar to act as a dispersing agent the pectin can quickly be gotten completely into solution under the conditions which exist in a confectionery plant and the batch will cook rapidly. The pH of the batch during the cook should be between 4.0 and 5.0 for pectin stability, the proper control of sugar inversion and the prevention of presetting. This is a simple matter and can be controlled by adding along with the pectin all of the buffer salt and from 1/4 to 1/2 of the acid to be used. The higher amount of acid where there is higher alkalinity in the water while the

reduced amount is recommended where the water is neutral or where sweating is likely to be a problem. Naturally, the remainder of the acid is to be added just before the batch is deposited.

We are sometimes asked if pectin jellies can be produced by the votator method. It so happens that in the ordinary open kettle process the amounts of water used in the starch confectionery jelly batches and those used in the pectin confectionery jelly batches are quite similar, however for dissimilar reasons. The amount of water used in the pectin confectionery batch is the amount needed to get the pectin completely hydrated or in other words into solution; while the amount of water used in the starch batch is the amount of water plus cooking time needed to cause the starch molecules to hydrolyze or break down into the desired gelatinous form. Since the amount of water in this latter instance can be decreased with increased temperatures, the high temperature high pressure procedure of the votator process reduces the amount of moisture needed in the original mixture. The reverse is true in the case of pectin where we are not trying to break the molecule down but simply are trying to get it into solution and then the cooking process is purely one of evaporating moisture. Thus to speed this mechanical procedure would be just the reverse of the votator and would involve the use of vacuum cooking for rapid evaporation.

Another dissimilarity between the starch and pectin jelly is one that occasionally may cause confusion and that is the belief that if the pectin jelly batch is not cooked sufficiently to the desired temperature, the proper setting can be obtained by leaving the batch in the starch a little longer. To a limited extent this is true but the setting of a pectin jelly normally doesn't depend upon the loss of moisture in the starch molds. The proper procedure is to cook to the desired solids (temperature) and then the batch can be cast onto a slab, in starch or in any other kind of a mold because setting is purely a physical property at that point and when properly controlled does not need any modifying condition such as loss of moisture through drying or absorption into the starch.

Pectin jellies are quite versatile. They can be made a part of the production and be fitted into the operational procedure of most confectionery plants. Better information relative to production procedures or specific problems is available as there is in the industry today better knowledge of both the technology of pectins and their functional characteristics.

Conferees: George Schou of Racine Confectionery Machine Corp. and W. E. Boyer of Boyer Bros., Inc.

Starches for the candy industry

(A Condensation)

BY J. W. EVANS
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There are four basic functions of starch in candy production. These are (1) as an ingredient for obtaining body and texture, (2) as a moisture retaining agent, (3) as a molding agent to shape or form the piece, and (4) as a dusting agent to prevent sticking of the confection to equipment and containers.

In selecting a starch or starches for a given application, properties which must be considered include the characteristics of the starch in dry form, in a slurry or suspension, during cooking or processing and after all processing is completed.

Properties of the dry starches which are important in many instances are granulation (pearl, powdered and pebble), color, flow properties, bulk density, dispersibility in different media, flavor and odor.

The characteristics contributed by the starches during cooking, heating and processing are also of great importance. Specifically, these are pasting temperature, rate of thickening, and viscosity change, time and temperature of maximum viscosity and flow properties of the cooked product. The influence of cooking conditions and other ingredients upon the paste properties of starches are described in a booklet "The Story of Starches" published in 1953 by National Starch Products, Inc. Information is also presented in the booklet

"Corn Starch" published by the Corn Industries Research Foundation, Inc. in 1955.

The properties of the starch after cooking and processing contribute materially to the quality of the finished confection. Involved are clarity, gel characteristics, water retention, texture, storage life and flavor. These properties are all controlled, and efforts are being made to make starches that will do more for the processor.

When starch is used as a basic ingredient in gum drops, and similar items, sugar, corn syrup, starch and water are mixed together in pre-determined proportions. These formulations are cooked or heated to dissolve the sugar, gelatinize the starch and develop the desired total solids content. The viscosity of the cooked mixture and the strength, rigidity and plasticity of the gel can be varied over a wide range by selecting the type of starch. Treated products made specifically for these gum confections (termed "thin-boiling" because their pastes have a lower viscosity than those of untreated starch) are available from the starch producers. The lower viscosity products are required to obtain the starch concentration necessary to form the gel or structure needed. However, the paste viscosity is not the only factor influencing the performance of these products. Different starches having the same viscosity values when formulated and cooked can form gels showing marked differences in clarity, tenderness, cohesiveness, strength and stability.

These starch characteristics have been and are receiving attention by the starch producers. In some instances the approach has been to control these factors and to emphasize the differences in a manner to yield more acceptable confections.

Another interesting factor receiving attention in recent years relates to the cohesiveness of the gum piece as influenced by the specific starch used in the formulation. Under certain cooking conditions which are used commercially some starches will result in gums which will break into sections after short periods of storage. Others will result in finished products which set to very rigid, hard gels. It is perplexing that these same starches will give excellent gums under other cooking conditions.

Starches have been employed as moisture retaining agents in confections for many years. Recently waxy corn starches processed to yield granules of controlled swelling properties have found application in certain types of marshmallows.

When heated in mixtures containing dissolved sugar and corn syrup of concentrations exceeding 60%, starches usually will not gelatinize or paste. The processed waxy starch granules even in these high sugar concentrations will swell or hydrate to such a degree they will adsorb and hold water. They are not swollen to such an extent that a viscosity increase is apparent during the processing step.

Corn starch has an important mechanical use in confectionery manufacture as a molding agent. It holds impressions well, adsorbs moisture without significant changes in characteristics, and can be readily reactivated for further use. In some instances, a small quantity of oil is added to the commercially dry starch to improve molding characteristics and to minimize dusting.

Starches are used as a dusting agent to enable the handling of sticky moist products.

In some applications where a starch whiter in color than the untreated corn starch is desired bleached products are provided. Performance characteristics are the same for the two types of starches but in addition to less color some of the bleached starches are more bland in flavor.

Another relatively recent development is dusting starches which flow or spread to a greater extent than the untreated products.

In conclusion corn starches in their varied forms and modifications assist in the production of high quality confections with increased economy and efficiency. The producers of corn starches all do research and development work on these products for the confectionery industry and improvements have been made. The starch supplier is always anxious to receive suggestions and ideas because improvements for a consuming industry are always the result of cooperative efforts.

Conferees: Hans Dresel of Felton Chemical Co. and Dr. C. Nieman of the Netherland Association of Confectionery and Chocolate Manufacturers.

Conferees: D. W. Watson and Henry Loos both of Kraft Foods Company.

Conferees: John L. Hickson of Sugar Research Foundation, William Duck of Franklin and Marshall College, E. W. Meyers of Hershey Chocolate Corp. and Jay C. Musser of Klein Chocolate Co.

A new edible, nutritive, protective glaze for confections and nuts

by H. B. Cosler
Quartermaster Food and Container Institute for the Armed Forces

Confectioners glaze has been used for many years as a protective and decorative coating for various types of confections. The glaze is made from shellac, and although it is non-toxic, it is non-nutritive, and its use on confections is limited by law to 0.4 per cent. Hard gums, or so-called Ju Ju Bees, made from gum arabic, gelatin, or starch as the binding agent, have been coated with a small amount of mineral oil to prevent sticking. This material is also non-nutritive and, in addition, will form a film on the interior of any transparent packages, such as cellophane, in which these confections are packed, thus detracting from their appearance.

When zein, a special protein derived from corn, was first commercially produced, the writer experimented with it as a coating. It is an alcohol-soluble protein having many of the characteristics of shellac. At that time, the zein had an unpleasant odor and taste and, when dissolved in alcohol, had a tendency to form a gel on standing. However, its possibilities as a coating to replace confectioners glaze were realized. Its primary advantage is that it is an edible, nutritive protein and can therefore be used without limitations as to amount.

With the advent of World War II, further work on these coatings was discontinued. During the past five years this work has been renewed. Meanwhile, the quality of the zein has been improved very much, and it is now almost bland in taste. Its stability in solution also has been improved.

Experiments showed that when zein was used alone as a coating, it was quite brittle and would either chip off or check or mar, resulting in an unattractive appearance. Various edible plasticizers were tried, but none was satisfactory, primarily because of insolubility in alcohol. In recent years, much work has been done on the acetylation of glycerides. Through experimentation, it was found that one of these was alcohol-soluble and provided an excellent plasticizer for the zein when used in conjunction with it. In addition, the combination provided an improved protective coating. Although zein alone provided a good oil barrier, it provided only a partial moisture barrier. The acetylated glyceride product provided the needed moisture barrier. By combining the two in the correct proportions, a coating was obtained which was resistant to moisture, vapor, and oil and which gave a finish comparable to confectioners glaze (shellac). In addition, all of the materials in the coating are edible and nutritive; therefore, it can be used, if necessary, in amounts exceeding 0.4 per cent.

This coating has been applied to the following confections as a replacement for confectioners glaze or mineral oil, with these results:

1. *Sugar Burnt Peanuts.* The new coating is as satisfactory in application and in drying time as confectioners glaze. The brightness of the finish is equal to that of confectioners glaze.

2. *Butter Creams and Candy Corn.* The finish is equal to that of confectioners glaze. Samples of both candy corn and butter creams glazed with confectioners glaze and with the new coating material were put into closed containers and placed in a continuous 100°F. oven. After one week, those candies coated with confectioners glaze were starting to stick together, and after two weeks, they were thoroughly stuck together. Those candies with the new coating remained loose, and the finish remained much brighter after storage than did the finish on those coated with confectioners glaze.

3. *Chocolate Panned Candies.* The new coating is as bright as confectioners glaze and is more resistant to the migration of fat to the surface.

4. *Hard Gum Candies (Ju Ju Bees).* Mineral oil which is usually used to coat hard gum candies will not prevent sticking or "sweating" in warm and humid weather, and it is also absorbed into the candy, thus causing the candy to become dull in finish. The new coating gives a bright, dry

finish. The coated candies were placed in the 100°F. oven for two weeks, and no sticking or "sweating" occurred. After a one-year storage period at room temperature, no change in the brightness of the finish was noticeable, and the candy remained soft and pliable. Apparently only partial drying had occurred. When the candy was stored in cellophane bags, no transfer of the coating to the side of the bag occurred as it does when mineral oil is used as a coating.

5. *Chocolate and Colored Shred.* (*Cake, cookie and ice cream toppings*). The new coating material is as satisfactory in application and as bright in appearance as confectioners glaze.

6. *Sugar Coated Pan Candies.* Jelly beans and cream-centered panned pieces were coated with the new coating to which had been added a small amount of powdered carnauba wax. A dry, hard, bright finish was obtained. This finish would probably be of particular benefit where high humidities are encountered. Several varieties of small panned candies are vended in bulk. Vending machines are not tight and the candies are subjected to humidity changes. By using this coating in conjunction with carnauba wax, a finish much more resistant to humidity is obtained without loss in appearance.

These tests have proved that the new coating is as satisfactory as confectioners glaze in the finished appearance of the candies and has the added advantages of providing better protection and of being nutritive. The same is true when it is used on hard gum work in place of mineral oil or similar non-nutritive materials.

The above tests were made on candies which currently are being coated with confectioners glaze or mineral oil. It was thought that the application of this coating to hard candy might retard or prevent stickiness.

Clear hard candies made on a half sugar and half corn syrup formula were coated with the new coating. Open containers of the coated and uncoated candies were put into a humidity chamber maintained at room temperature (65° to 75°F.) and approximately 90% relative humidity. The following were the results:

Hours	Condition	
	Coated	Uncoated
24	Dry	Sticky
48	Slightly sticky	Sticking together. Can be broken apart.
72	Slightly sticky. Can be broken apart easily.	Stuck together. Cannot be broken apart.
144 (6 days)	Sticky. Can be broken apart.	Badly stuck. Melting.

Another lot of clear hard candy made with 60 parts sugar and 40 parts corn syrup was coated and tested in the same manner with the following results:

Hours	Condition	
	Coated	Uncoated
24	Dry	Slight stickiness.
48	Dry	Sticky
72	Slight stickiness	Sticky. Can be broken apart.

Hours	Condition	
	Coated	Uncoated
144 (6 days)	Sticky. Can be broken apart.	Stuck together
192 (8 days)	Sticky. Can be broken apart Slight graining.	Stuck together. About one-third grained

Plastic filled hard candy was also coated with the new coating during the summer months. Both the coated and uncoated were kept in open jars at room temperature. Temperatures up to 100°F. were reached with rather high humidity. After two days the uncoated candies were stuck together. The coated pieces were loose and free flowing. After one week the uncoated were stuck together and had grained. The coated were loose and had not grained.

The coating definitely retards sticking of hard candy when it is exposed to higher temperatures and humidities. There are, however, two objections to its use on hard candy. First, on white pulled or white plastic filled candy, it gives a slightly off-white yellowish color; and second, in the eating of the coated hard candies, if they are allowed to melt in the mouth, there is a slowness and unevenness in the initial dissolving, due to the slow solubility of the coating in the saliva.

This completes the types of candies which were actually tested by coating with the new material. Other types of candies on which the coating can be used to advantage are not covered. Those of you who are familiar with the various types can readily conceive of other applications. For instance, small broken candy pieces, for use in ice cream, can be coated to preserve brittleness and prevent melting in the ice cream mix. Peanut bars can be coated and when coated should be much more resistant to high humidity.

On all of the candies tested, except the hard gums, the solution used contained only half as much acetylated monoglyceride as the coating for nutmeats described in a previous paper. This was sufficient to give plasticity to the zein and protect from moisture transfer while maintaining a high gloss on the candies. The hard gums were coated with the same coating as used for nutmeats except no antioxidant was added. This seemed to perform similarly to mineral oil by creeping into the depressions in the hard gums, where it is difficult to remove all of the molding starch.

Some of you heard the paper on the coating of nutmeats and peanuts given at the last annual meeting of the American Association of Candy Technologists. Others received copies which were distributed by the Association or read it in the trade magazines. Since then, several tests on pecans and roasted almonds have further confirmed the results given in the paper. Some of you may be interested in salting peanuts or other nuts. Tests run on both dry roasted and oil roasted peanuts by adding 0.5 percent of the coating to the peanuts and drying, then adding the remaining 0.5 percent of the coating and adding the salt as soon as the coating was distributed over the peanuts, gave a product which, at room temperature, did not develop staleness or rancidity for several weeks. In addition, there was no surface oiliness to remain on the hands after eating or to rub off on transparent containers such as celiophane bags or the glass bowls of vending machines.

A revised military candy specification is now in process of coordination, which will specify the use of roasted almond pieces coated with this protective coating and incorporated into solid chocolate type ration bars. The specification will also require coated roasted peanuts for use in the peanut roll bars. The coating will also be required on candy corn and on peanut bars of the hard candy type.

In addition to being nutritive and providing a protective and decorative coating, the cost is comparable to confectioners glaze and will probably be more stable in price. Shellac, which is the coating constituent of confectioners glaze, is imported and subject to the fluctuations in price usual in imported materials. The components of this new coating are derived from domestic sources; namely, corn and edible fats, and are more stabilized in price in addition to always being available.

Some precautions are necessary in the handling and storage of the new coating. It should be stored at temperatures of between 65°F. and 80°F. If the solution is subjected to lower temperatures it will solidify but will readily go into solution if warmed to 80°F. to 90°F. If held at higher temperatures—95°F. to 110°F. for several hours solution. The coating should not be held longer than 2 to 3 months at temperatures of 65° to 80°F.

Confectioners should experiment with this new coating material and, if their results are in accord with the above, they should seriously consider its use as a coating. It should be a satisfaction to every confectionery manufacturer to know that all of the materials in his product are edible and nutritive.

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PMCA PRODUCTION CONFERENCE

Quality control: Laboratory instrumentation and application

(A Condensation)

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What's the purpose behind all this talk about laboratories and quality control? They are only the means to an end. The end being, in my opinion, to give increased value to the consumer. There is a simple equation for value, it is quality/cost. We can give more value in two ways—by lowering cost and/or raising quality. To find ways to increase value, we turn to a scientific approach.

We, at Sears, in our presentations to our sources, have stressed many times the advantages of a laboratory. To refresh those of you who may not be aware of these advantages, let me state them once again. A laboratory can assure you of the following:

1. Control over raw materials through the setting of specifications and testing compliance with these specifications.
2. Control over and improvement of product quality.
3. Constant development and improvement of formulas and methods, resulting in cost savings.
4. Control of finished goods, which also includes packaging materials.
5. Improved sanitation and housekeeping.
6. Improved customer acceptance because of confidence in uniformity high quality deliveries.

You no doubt noticed that the list of benefits to be derived from a laboratory installation was

headed by control of raw materials and the setting of specifications. It is an absolute necessity that we begin with satisfactory ingredients.

The second point in our list of benefits is control over and improvement of product quality. This is purely a check to enable you to know what is going into your product and how it is being produced. Food production is basic chemistry, whether you want to think of it as such or not.

The use of pilot equipment and the investigation of new ingredients and methods is certainly likely to lead to better products and cost savings. A check of competitive products will often yield valuable information.

The control of finished goods is important. Taste appeal, appearance, count/pound, assortment, color, flavor and shelf life—they are responsible for repeat sales.

Improved sanitation and good housekeeping cannot be stressed too strongly. This, we have learned, has become so important a part of the success of quality control that we feel that if sanitation and good housekeeping are not the first consideration in any scientific quality control program, it is not worth attempting because it has little chance for success.

Concerning improved customer acceptance because of confidence in uniformly high quality deliveries, certainly no elaboration is necessary.

At one of our meetings we proposed a plan for a laboratory installation. We suggested furniture, chemicals, apparatus and equipment which we considered a good beginning toward the establishment of a laboratory. As far as instrumentation is concerned, we recommended several basic pieces which by no means may satisfy everyone's conception when one speaks of laboratory instrumentation.

I would like to briefly run down the list of our proposals.

1. Vacuum oven and vacuum pump.
2. Analytical balance and balance weights.
3. Triple beam balance.
4. pH meter.
5. Micrometer caliper.
6. Microscope.
7. Kjeldahl digestion and distillation apparatus.
8. Hand refractometer.
9. Polarimeter, inversion tube, sodium vapor lamp, circulation water pump.
10. MacMichael viscosimeter.
11. Water bath.

In addition we listed laboratory furniture, apparatus and chemical reagents.

This constitutes quite an array, not of basic research caliber, to be sure, but tools which can be used to get a plant off on the right foot in setting up a laboratory. The cost of such a setup is surprisingly low.

We have, up to here, neglected to mention the most important tool necessary for the success of a laboratory installation. That tool is man himself. A good laboratory man is needed to not only devise and carry out testing and development work but to be able to interpret results as well. Of prime importance also is the man behind the man. Management plays a most decisive role, first, in envisioning the need for a laboratory, second, in creating an atmosphere conducive to its acceptance and third, in giving it his full support and cooperation.

Let me give this warning—such a method of control and quality improvement as brought forth in this paper is restricted—it is not for complacent individuals, rather it is for only those who take justifiable pride in their products, for those who want to know what is really being purchased and what is really being produced. In short, for those who want to create a better value for the consumer.

Our customers place a great deal of confidence in merchandise purchased at Sears. They know of the honesty and integrity on which the company has flourished. We have a great responsibility to our customers. We have accepted that responsibility in many fields besides confectionery. We have watched other industries face the same problems, going through many of the same transitions which confront those of us in candy. In most cases, the change has been accomplished through scientific method. We know the candy industry will likewise progress through the adoption of adequate quality control procedures. When such a plan becomes universal, it will create still greater demand for good candy.

Conferees: Paul P. Ashley of Cacao Barry, Inc. and Otto H. Windt of E. J. Brach & Sons.

Conferees: Daniel H. Wing of Guittard Chocolate Co. and Stan Ferris of Dairyland Food Labs.

Quality control: Chocolate

by L. Russell Cook
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Where chocolate is involved at all in the quality control of your confectionery products, it is of *paramount* importance and deserves very special attention, particularly since quality control of chocolate can be only partly by scientific means.

The original choice of the proper chocolate coating for any specific confection is of vital importance, but presents a subject of sufficient magnitude that it would deserve individual consideration. For this reason, I feel that the original choice of the coating is beyond the scope of my particular assignment and will assume that the proper quality of coating has already been chosen. One does, however, often face the necessity or the desirability of having an alternate supplier of coating, which then presents the problem of exercising quality control in the choice of alternative supplies of products already established.

One has a choice, when approaching this problem, of seeking: 1.) interchangeability, which then requires the fairly precise matching of one manufacturer's chocolate coating by another, or 2.) of blending coatings from two or more suppliers and thus requiring not so much precise duplication as similarity.

Where interchangeability is your desire for the alternate supply, there are two kinds of specifications that you will want to give the prospective supplier in addition to a fresh sample of the coating that you want duplicated. These two kinds of specifications can be roughly defined as scientific and organoleptic. The scientific or analytical specifications that you will supply should include the fineness and the viscosity, reported according to the NCA standard methods, along with the desired chocolate liquor, milk and sugar content. Organoleptic specifications, of course, cannot be put into words and will have to be judged from the color and flavor of the sample that you provide. Some idea of the approximate age of the sample should also be given the prospective supplier so that he can estimate what effect age may have had upon the flavor of the coating.

While you will quite naturally want to enforce close compliance with your fineness and viscosity specifications, it is not in my opinion a good idea to enforce mathematical compliance with specifications as to precise content of liquor, milk and sugar. While it is very convenient to be able to use mathematical specifications for the liquor, milk and sugar content of coating supplies, and while you very definitely should expect uniformity in these matters in a coating purchased repetitively from a specific supplier, you should not necessarily expect precise duplication of these analytical figures when you are having a coating duplicated by a potential second source of supply. Of course, once the second source has produced a duplication of which you approve, you can then hold him to a repetitive duplication of the analytical constituency of his coating in succeeding shipments.

The reason for this seeming contradiction is that each manufacturer will employ his own skill in blending and processing, and might not necessarily use the exact formulation employed by another in order to arrive at the same end result. Chocolate is like a painting—a work of art and skill as well as of science. What you are interested in is the impression made by the finished article, not the mathematics of its analytical makeup.

This can be illustrated by considering the milk content of a coating. It is just as erroneous to say that "milk is milk" as it is to say that "cocoa beans are cocoa beans", or that "candy is candy". There are many ways of preparing milk for use in chocolate, although all types must be virtually moisture free by the time the chocolate is finished. Each method of preparation yields a different character of milk flavor, and each bears a different cost. From the standpoint of flavor, it is possible to produce a better milk chocolate flavor with 15% of one kind of milk, for instance, than can be produced with 20% of another. While the former may be a more expensive milk per pound than the

latter, some economy can sometimes be effected with the smaller percentage use of the higher quality milk, which can then be spent on better beans or processing. Thus a blind devotion to the mathematical construction of a milk coating can cut you off from even considering a product of other configuration that might either save you money or produce an even superior product. Requiring duplication of flavor, character and color is a far more useful means of obtaining interchangeability than is a simple comparison of the mathematical content of liquor, milk and sugar.

Even in the case of fineness, neither microscopic nor micrometeric measurement comparisons mean as much to you or to your consumer as does the oral smoothness of the coating when consumed; and it is not always true that coatings of differing micrometeric fineness measurements cannot taste equally smooth. This can be illustrated to you by reminding you that if two groups of particles have the same dimensions, but that the corners in one group are sharp whereas in the other group they are rounded, the latter will certainly taste smoother to the mouth than the former. Conversely, it is entirely possible to have a slightly larger particle size of rounded particles with an equal smoothness to the mouth.

Perhaps a generalized summation of the best way in which to check a proposed duplication would suggest that the coating be compared on the finished candy for flavor, mouth smoothness, and color; with no analytical comparison being made at first, and pre-specifying only viscosity from the standpoint of mathematical specification. If the proposed duplication is accepted, then is the time to analyze it for precise fineness, sugar, chocolate liquor, milk and fat content. The supplier of this accepted coating can then be required to adhere to the specifications found present in his own coating that you have approved. In this way you might very well end up with two interchangeable coatings having somewhat different mathematical specifications, although they are of equal usefulness from the standpoint of customer impression.

I do not believe that requiring interchangeability is usually in your best interests, unless by chance you are trying to produce identical products in two different plants where it is desirable to have the coating from each of them drawn entirely from a separate chocolate manufacturer. Where you want more than one source of supply of coating for a single plant operation, I believe that your best interests are better served by blending coatings from various suppliers than by attempting to obtain precise duplications, with one supplier's coating being used one week and a secondary supply being used the second week. There are various reasons for this opinion.

In deciding to blend coatings as a means of having two sources of supply, instead of requiring precise duplication, you have one very definite disadvantage in that you must then maintain inventories of both coatings at the same time, and in somewhere near the proportions called for by your blend. Conversely, there are a number of advantages which in my opinion make this disadvantage very well worth accepting. Perhaps one of the greatest benefits resulting from blending coating is the individuality that you acquire. It would be exceedingly difficult for any chocolate manufacturer to match a coating that is the result of a blend, and even more difficult for any of your competitors to duplicate your results unless he were to fortuitously learn not only the identity of the coatings and their sources, but also the precise blend that you use. Since individuality is one of the most powerful forces of competition, it should not be shrugged off by over emphasizing the difficulty of maintaining the dual inventories.

Another advantage of spreading your sources of supply by blending is the avoidance of buying "specials". While it is certainly frequently worth while the effort for a chocolate manufacturer to create a special piece for a large customer, you do run the risk, if you are not a very large user, of wanting immediate shipment of the special that you have been buying and finding the manufacturer without sufficient inventory to quickly supply your needs.

Still another advantage of blending is the protection afforded in the event of the disappearance of any supplier from the scene, or as a result of your gradual disappointment in him for one reason or another. In cases where this happens, a gradual change in the blend can be created without too much customer disturbance, thus affording ample opportunity to seek a replacement source.

As a final advantage of blending, since similarity of color and flavor to the originally chosen coating is more important than its precise duplication, your field of choice will be very much wider, and replacement of any given source proportionately easier and quicker. About the only precise specifications that should be duplicated are the fineness and viscosity. So long as color and flavor are kept closely similar, the gradual introduction of a blend will create the advantages that I have outlined without undue customer disturbance.

Regardless of whether you are choosing a second source through interchangeability or by blending, one very important matter to watch is the character of the chocolate flavor as determined by the kind of beans used. It is vital in the chocolate liquor used in your coating that its flavor character be of a kind for which the public over the years has demonstrated a ready acceptance. It is unfortunate that no analysis can determine the kind of cocoa beans that have been used in chocolate. For this you will have to familiarize yourself with the cocoa bean flavors the public has rejected, tell your suppliers you don't want them used and then check up on them by tasting the coating yourself. In the process of doing this you will have to remind yourself that the fact that the taste of something seems acceptable to you, or even to a panel, does not mean that the public will accept continued use of a coating made with the cheapest beans. It is unfortunate that there is not more of a drastic

and easily recognized difference when some of the cheaper beans are used. It is easy sometimes to accept a coating which is *almost* equal, feeling that the slight difference is not important. Yet we know that even slight differences in the character of chocolate flavor, when caused by the use of certain types of beans, can cause a gradual rejection by the public. If this seems to you to be pure theory, consider the following:

It is elementary that that which is in short supply is more expensive, and that of which there is plenty is less expensive. Thus Java, Maracaibo, Arriba, La Guayra Caracas as examples are normally more costly than Bahia, Accra, Lagos and Cameroon Beans. The demand for the former group in relation to the crop is greater than for the latter—and the price of the former is greater than that of the latter. This is what you would expect. But what would you say of Sanchez, Panama, Mexican, Costa Rican, Haitian Beans when their crops are also *smaller* but their prices are *still lower?* If, over the years, the world public sufficiently accepted the flavor characteristics of these small crop/low priced beans, would not the demand for them be greater? If the demand were greater, would not the price be higher—rather than the lowest of all as they are? Is this not sufficient evidence for us that the cheaper price at which coatings can be made from these cheaper beans is a false economy which can result only in reduced consumer acceptance? It is important that considerable care be given to either limit or avoid the use of these substandard beans, and the results will be well worth the effort that you must expend to accomplish this objective.

With approved supplies of chocolate coating rolling in, there are a number of quality control measures that it would be advisable for you to exercise within your plant. Perhaps the easiest factor to check on and control is that of viscosity; yet it is an extremely important one and is the component of quality most often ignored. All other things being equal, the higher the viscosity, the less butter is needed and the cheaper the coating will be. The catch is that increasing viscosity yields progressively less "mileage" and the lower cost per pound of chocolate is usually accompanied by a higher cost per pound of your own finished goods. While there is obviously no point in paying for a lower viscosity than you need to acquire the desired coverage, it is equally obvious that a cheaper price on a coating is not cheaper at all if you end up using more of it. Furthermore, un-uniform viscosity changes the ratio of coating to center and hence the taste effect of the finished confection, control of which is your ultimate objective. Investment in a viscosimeter to check the viscosity of your coating will pay dividends, and you do not require a chemist to operate it.

The fineness of the coating supplies that you receive is equally easy to check and should be watched closely. Variable fineness not only affects the oral smoothness of the coating, but its flavor as well.

In controlling the flavor and color characteristics of your incoming shipments of coating you certainly will want to retain "standard samples" against which to check fresh shipments. In retaining these standard samples, however, please remember that age does make a progressive change in flavor, and sometimes even in color. For this reason it is well to change your "standard" samples as frequently as you are able to choose precise duplicates from your shipments, trying never to hold standard samples for more than about three months.

I would like to emphasize the method by which you can best make color comparisons from one batch or shipment to the next. Comparing the apparent color of two different cakes of coating can be very deceiving, because even small differences in tempering can alter the intensity of color as well as its shade far more than you might expect. Because of this the only sure way to properly check color is to melt a small piece of each of the samples to be compared on a clear glass, so placing the samples that their edges touch or run together. Because the topography of the surface of these melted blobs can also reflect differences in color intensity, the samples should then be observed through the glass by turning it upside down, and comparing the color in a north or blue-white light.

Since chocolate coating is very sensitive to improper storage conditions, careful attention to this factor is very important. Both before the coating is used as well as after it has been applied to the candy, good storage conditions will be found at a temperature range between 65 and 68°F and at a relative humidity of less than 50%. Considerably colder temperatures and even sub-freezing conditions can properly be used for storing chocolate coating for prolonged periods of time, providing that care is exercised when the coating is removed to more normal temperatures to avoid condensation or "sweating" which can play havoc with the viscosity of your coating as well as create conditions that are conducive to rapid staling.

One frequently overlooked measure of quality control on coating is proper rotation of stock. Remembering that all coating does change with age, care should be used to place incoming supplies in your storage room in such a manner as to refrain from blocking easy access to older supplies. This sounds like a very simple admonition, but it is really surprising how often chronological stock rotation is not practiced.

The melting, tempering and preparing of your coating for use at the enrobers or in hand dipping rooms all present opportunities for the exercising of good quality control. It is not my intention to discuss at this time proper methods of melting, tempering and tunnel control. You have had many excellent discussions on all of these subjects before, and I know that all of you are fully familiar with the best practices. All that I would like to say with regard to them at this time is that since you do know how to do a good job with these factors, be careful to follow the practices that you know will assure you of success.

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It might also be appropriate to mention the importance that a uniform method of tempering has to the viscosity of your coating at the enrobing or dipping point. Even good tempering practices allow a certain range of coating conditions; and within the range permitted by good practice, there is quite a viscosity difference which will materially affect the actual coverage or "mileage" that you get from your coating. This is very obviously the result of vacillating percentages of crystallized cocoa butter present at the precise time that the coating is applied to the center. I know that you are all familiar with these facts, but frequently their importance is overlooked, and the effect of the degree of temper on the actual covering power of the coating is just as important as is the original viscosity control.

There is one matter that I would like to mention to you that I think is mighty important in the quality control of your chocolate candies that very often is not considered a matter of quality control at all, but rather a function of the personnel director or labor union.

In many plants, when a good job is vacant, seniority rules in allowing other employees to "bid" for the job. All too frequently this practice results in your enrober man, who controls your tempering, being on the job only until a better job in the plant is available. It is not the seniority practice that I criticize in this case, but rather that you have not placed enough importance on the tempering and enrobing job itself. In my opinion there is no production job in the plant that is more important to you than that of your enrober man. His pay should be at the top of the scale so that there is no temptation for him to desire some other job in the plant. Elevating the enrober man's job to this rightful level should then result in your being able to hold the best man in your plant on this important job. After all, the appearance of your finished goods is the "face" that you present to your customers, and it would seem very shortsighted to risk the appearance of that "face" by losing your enrober man to what is thought to be a superior job, just when he has learned to handle his tempering in a uniform and efficient manner. A great deal can be lost while another man is being trained to handle the job as well as the old man has learned to do. Your enrober man is the creator and guardian of the first impression that your products make to the public. Get a good one and keep him at it with appropriate pay and "standing".

Conferees: Fred Moser of Luden's, Inc. and J. L. Robinson of Jabez Burns & Sons.

Modern trends in the handling and storage of packaged commodities

(A Condensation)

by GILBERT I. ROSS
Partner
Ross & Company

In reviewing developments and trends of the recent past, it does not appear possible to point to some one development and say, "this came first", or to say that some specific development was the basis of all progress or cause of the ensuing trend. Rather, the picture seems to be one of evolution and change in a number of different areas where a new concept or a new technique is more quickly put to practical use than heretofore. This ability to apply, adapt and improve upon new devices and new techniques seems to be an inherent part of the American industrial "know-how".

During recent years, concepts as to the most favorable locations for warehousing and distribution have changed considerably. Many factors have served to make locations which formerly possessed advantages for warehousing and distribution less attractive than locations near highways, through-ways, and the more open land spaces.

Today there is a preference for the single-story building. Columns are set further apart, allowable floor loadings are greater, clear heights are greater. There is a tendency toward more openness, greater flexibility and more freedom of movement. Rail sidings are fewer, there are more truck docks, and in many instances receiving and shipping departments are separated. New styles in building and new equipment permit handling and storage of many items in intact unit loads, thereby eliminating much manual re-handling.

The fork lift truck, which exploited the potentialities of vertical as well as horizontal movement with intact loads, also has increased in capacity, capability, and endurance.

Power tractors to haul trailers also have advanced handling efficiency. They save milage, and make it possible to move large loads with minimum manpower.

New conveyor capabilities also have contributed to efficient handling. It is in such operations as sorting, accumulating, packing and staging that conveyors have been most profitably applied.

There also have been significant developments in the design of accessory and related equipment for warehousing operations. Included in this category are such items as automatic pallet loaders and unloaders, load stackers, lifts to properly position loads, automatic strapping machines, carton gluers, scales, counters, automatic dock boards, automatic electrically operated and other special doors, and other equipment.

These developments and trends have been accompanied by another factor of tremendous importance; namely, a terrific inflation of facilities costs, and a rising trend in labor costs. Historic relationships between existing facilities costs and replacement costs have been changed. And, the balance between labor costs and facilities overhead has been altered.

Now we have reached a point in the development of handling equipment and techniques where it is possible to generate certain of the operational instructions by machine and to transmit them automatically to handling equipment. This equipment, when instructed, is able to perform operations previously done by man. Frequently, this is referred to as "automation".

Usually, it is found that these avenues of improvement are closely related and that consideration of one leads to the next, and so forth. For example, the physical characteristics of the building and equipment, more or less prescribe the methods and techniques that may effectively be employed. Conversely, the methods and techniques that one desires to employ, to a certain extent, define the necessary type of equipment, its layout and the most desirable size, shape and type of structure to contain the operation.

We seem to have come to the stage in the art of automatic equipment where the emphasis should

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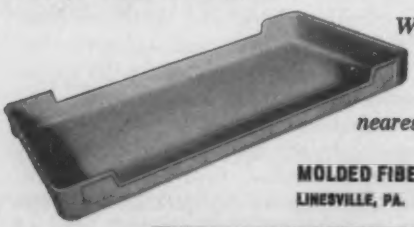

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be more on the "feasibility" aspect rather than on the glamour of "automation" as such.

The challenge today is to conceive and design a system wherein cost will be in a proper proportion to its advantages.

The automated installation seeks to pick up where prevailing equipment and techniques leave off. It seeks to achieve its increment of efficiency by eliminating man altogether, where economically advantageous to do so, or, in the alternative, by minimizing his task so that he can accomplish more. Sometimes also, it seeks to reduce errors or damage.

In approaching the design of a handling facility which is to use automation techniques, one must be able to break completely with tradition. For example, it is conceivable that one technique of intra-plant handling may be applicable to rapid turnover packages and a distinctly different one for slow movers. It is conceivable that pallet loads, as such, may be adapted to automated handling or possibly the entire palletized principle may have to be discarded in favor of moving merchandise a case at a time and storing it on conveyors or slides.

There are, of course, endless possible combinations of various mechanized, automated, and manual operations. With the optimum balance of manual and machine operations the "pay out" will be more likely to justify the investment than with a completely automatic system.

The basic problem is to perform certain handling services within certain permissible cost limits. Many elements go to make up such costs, including labor, fixed charges and other overhead. Frequently, labor costs can be reduced through capital investment, which increases carrying charges. And, so we shall continue to have an incessant search for the optimum balance between investment costs and wages. In other words, one must select from the available facilities, methods and techniques that peculiar combination which will produce the best result for his company.

Conferees: Stan Allured of The Manufacturing Confectioner, Neil MacEwen of National Starch & Chemical, William I. Gorfinkle of J. O. Whitten Company and John Vasses of Stephen F. Whitman & Son.

Conferees: Connie Cockinos of Hansella Machinery Company and Andrew Miga of Vick Chemical Company.

PMCA PRODUCTION CONFERENCE

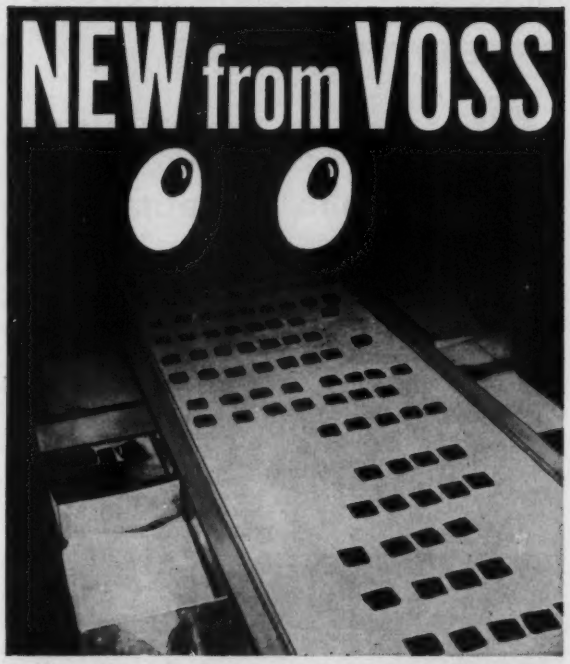
Report of PMCA research

BY JAY C. MUSSER
Vice president — Manufacturing
Klein Chocolate Co.

The P.M.C.A. Research Program is about to enter its thirteenth year of operation. This report will briefly summarize our plans for the immediate future and review the work of the past year.

First I should like to say a few words about the organization of the Research Committee. As you may remember, our Committee (whose names appear on the back of your program) operates as a basic policy group. We meet approximately four times a year. The immediate direction of our project work is in the hands of the sub-committee chairman. These men together with your chairman and Mr. Duck, meet regularly to review the progress of our projects, and discuss the problems of each individual project. The two sub-committee chairmen are Mr. E. W. Meyers, in charge of the chocolate phase of the program, and Mr. Clifford Clay, in charge of the general line candies section of the program. It is the continuous cooperation and guidance of these men that has made the effectiveness of this program possible.

It is for this reason that I am sorry to report the resignation of Mr. Clay as chairman of the general line candies sub-committee. Mr. Clay has resigned because of the pressure of his other work. It is impossible for us to say how much Mr. Clay has contributed to our program over the years, bringing to it his broad experience and capable direction. He has in no small measure been responsible for the success which we have achieved. The Research Committee has not yet appointed



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his successor. This will be done in the very near future, and will be announced at that time.

Second I should like to discuss briefly the technical aspects of our program. Our research is aimed at the general problem of shelf life and shelf life improvement in confectionery. The problem is divided into two parts, the shelf life problems of chocolate and, the shelf life problems of candy in general. The chocolate phase of the program in this past year, has been concerned primarily with modifications of chocolate to minimize or completely eliminate fat bloom. Another chocolate project involves the development of a method for the determination of temper through viscometric measurements. This method we expect to have ready for plant testing late this year or early next year. The confectionery phase of the program also has two projects. The first is a long range study of the consistency of candies, its measurement and the factors which determine it. One aspect of this project will be discussed by Mr. Duck later in this conference. The second project in confectionery studies has been recently completed. It was the development of an instrument to easily determine the moisture in candies. This instrument is now in use in several of the members' plants.

During the past two years, the Research Committee has been studying the broad basic problem of direction of our program and steps which should be taken to insure its orderly development. This study has shown that with the large background of information and the experience which we possess, we could expand our project work. In order to accomplish this expansion of effort the Research Program can now be joined by anyone in the confectionery industry. Details about joining the Research Program can be obtained by contacting any member of the Research Committee.

Another result of our study has been a change in the method of reporting results of research to our members. This has been done so that the information will be more readily available and more directly usable in the plant. In the past, our progress reports have been issued periodically, these reports summarized the results of all projects to date. This method of reporting required a study of several reports to review any particular project. As a result of this practice we found that valuable information was not readily available for use in the plant. In order to eliminate these difficulties, we are now using a new type of report. The project report, which is complete and issued at the conclusion of a specific project. The project reports are written in two parts. One part containing the technical and specialized information, the other part providing detailed information so that the results of the project can be used in the plant. Projects are chosen as long range studies which may well carry for several years and short range studies, covering problems on which we can supply information of immediate interest and usefulness to the industry. The projects are so divided, both in the chocolate area and in general confectionery section. It is the belief of the Committee

that by reporting in this way, our service is more effective to the members of the program. The P.M.C.A. Research Reports are supplied only to the members who support this program. In addition, any information which results from our studies is not released for general publication until one year after the work has been completed and reported to the members.

The final phase of the Research Program is our quarterly issue of the P.M.C.A. Literature Abstracts. This service continues and is available on a subscription basis. Anyone interested can contact the editor, Mr. William Duck, here at Franklin & Marshall College. It is also a part of the regular service supplied to the Research Program members. The Literature Abstracts have been regularly published for the past year. We feel certain that they will fulfill a long felt need in the entire confectionery industry.

With this years work our program has finally reached its teens and like a person, has grown to a point where its background and experience become a vital factor. We feel strongly that we are now in a position to utilize this experience which has been so slowly developed, to bring greater benefit to the confectionery industry.

Anyone who is interested in joining our program can see me, or any of the other members of the Research Committee. We shall be most happy to give you details about joining the Research Program.

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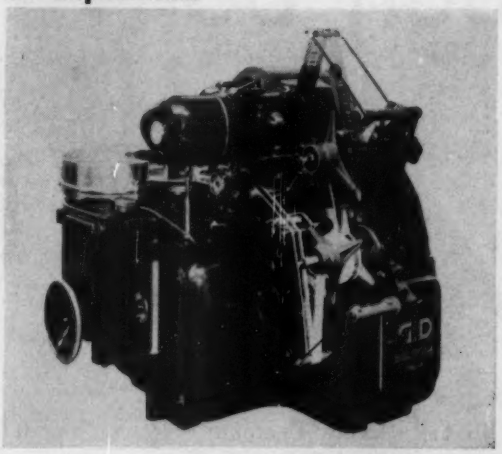

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Thoughts on the formulation of extruded marshmallow

by WILLIAM I. GORFINKLE
President
J. O. Whitten Co.

Extruded marshmallow, as a term, has a very modern sound, yet it has been made for quite a period, if we consider its broad meaning. Molded novelties and goods deposited on paper come under this heading and are probably very early types.

For our purpose, think of extruded marshmallow as an aerated gel containing sugars, and often starch, which is finished and ready to pack within a short time, less than an hour for instance, after it is rated or whipped and forced out (extruded) from the rating device directly or through a machine which uses dies or molds for shaping the product into final form. This mechanical handling is to be discussed in papers by others.

The marshmallow usually discussed is a "drop"—a white, sweet piece, slightly dusty, and which can be toasted with appropriate cocoanut, or roasted over a fire. Many are used in hot chocolate, as well as in salads and other pleasant culinary preparations—an old, inexpensive, very popular candy food.

In designing a formula for a piece like this, look at the conventional marshmallow—a drop, cast in dry starch and cured overnight. These are usually made according to the proportions in Column I of Table "A". Column II shows the percentages of each material in the batch as cast, and Column III shows these percentages in the finished piece.

TABLE "A"—Calculated

MATERIAL	I Formula as Cast	II % Approx. as Cast	III % Approx. Finished	IV Trial Formula Extruded	V % Approx. as Extruded
Sugar	60.	45.	52.5	60.	51.5
Corn Syrup (Assume) (20% H_2O)	40.	30.	35.	40.	34.5
Gelatin #250	2.5	1.9	2.25	3.25	2.8
Water, added	30.	23.1	10.25	13.	11.2
Total Moisture about	132.5 28%	100. 28%	100. 18%	116.25 18%	100. 18%

It seems self-evident that a batch extruded in the proportions shown in Column III should give us the same piece made by following Column II, and casting in starch. If we examine this, particularly after aging, we see this is *not* so. The piece has little resiliency and tends to be soft, with fine graining—certainly not similar to the usual article of commerce.

If we compare this further with our old friend, we see that this non-resilient, slightly grained material is like the outer rind or shell of the drop. While the extruded piece is practically the same all the way through, the center of the drop is more moist and resilient. This difference is caused by two factors:

1. The moisture content of an extruded piece is almost the same all the way through, with little surface drying.
2. The moisture content of a drop, determined by analysis, is an *average*. The interior is more moist and the outer shell is less Moist—probably down to 9 or 10%, because of drying by the casting starch. This gives grain on the outside—desirable in this type to prevent sticking and to keep the pieces in a strength.

A very interesting sidelight at this point is the loss of resiliency as the marshmallow surface dries. Our present thought is that the gelatin is forced out of solution because it is dehydrated by the increasing osmotic pressure of the sugar solution as moisture content drops.

Graining is restrained by increased gelatin, which also increases body and resiliency. Increasing the gelatin content to 3 to 3-1/2 pounds—#250 gelatin gives us a pleasing product—see Columns IV and V. Its eating properties are not identical with those of a drop, but they are surprisingly similar. The increased resiliency makes the piece stand up without deformation when bagged, and this resiliency does not tend to disappear.

There are still the aspects of production to consider. Marshmallow made this way must be not too viscous, must set quickly, yet cut easily. If viscosity is high, difficulty is experienced in the aerating process. Higher output temperature and higher back-pressure are needed. If the marshmallow sets too slowly, the rope slumps as ex-

truded and the cutting device gums up easily. Slower-setting batches tend to be more sticky. We know that high viscosity is due to the corn syrup and goes up as the moisture goes down. The batch sets more readily the drier it is. It is also more gummy and the cutting range is narrower. Two steps are helpful in overcoming this.

1. Raising the moisture content as high as possible (with regard for preventing fermentation), lowers viscosity, but hurts the setting and eating properties. To get these factors into the desirable range, more gelatin is necessary. Use enough to give the desired "bite" or body. (See – "Gelatin – The Body Control Agent In Marshmallow" – PMCA Conference, 1953).
2. Using extra high strength gelatin (effective bloom 300-325) lowers the amount of gelatin required, lowers the viscosity, permits lower back-pressure and lower discharge temperature, improves the setting-rate, and widens the range in which the extruded goods may be cut easily. The lower gelatin concentration and higher moisture will keep the piece soft longer and reduce any tendency for the candy to lose its resiliency.

The various ingredients can be adjusted to make any finished piece the manufacturer wants. The limitations of the various closed aerating systems affect the handling and the ratios used. In our experiments, it was found that 60/40 formulas were too sweet when the finished piece was tender enough to dissolve readily in the mouth, allowing all the sugar to affect the taste buds.

Our laboratory feels that this formula makes an excellent white marshmallow:

TABLE "B"

	Formula as Extruded	% Approx.
Sugar	55	45%
Dextrose	5	4
Corn Syrup	40	33
Extra-High Strength Gelatin	2.5	2
Added water	19	16
	121.5	100%
Moisture Content		22%

These pieces are fluffed easily to 2-1/2 pounds per gallon. They contain about 80% air. The solids portion has 22% moisture. Light batches have less mass, therefore they set more readily. Cutting is easier because the marshmallow is stiffer and because there is less mass in front of the knife. This combination handles well and is dusted and packed quickly, without sticking. Small-scale consumer tests rate these confections "Super."

By varying the ingredients as necessary, with regard for their properties, it is possible to extrude marshmallow with a wide range of characteristics –plain, toasted, novelties, and for chocolate-coating, just as long as the moisture content is high enough for the batch to be handled.

Extruded marshmallow is an excellent confection that can be made at low cost while using fine ingredients. Extruded mallows can be made fluffier than conventional pieces. *Lighter pieces fill bigger bags.*

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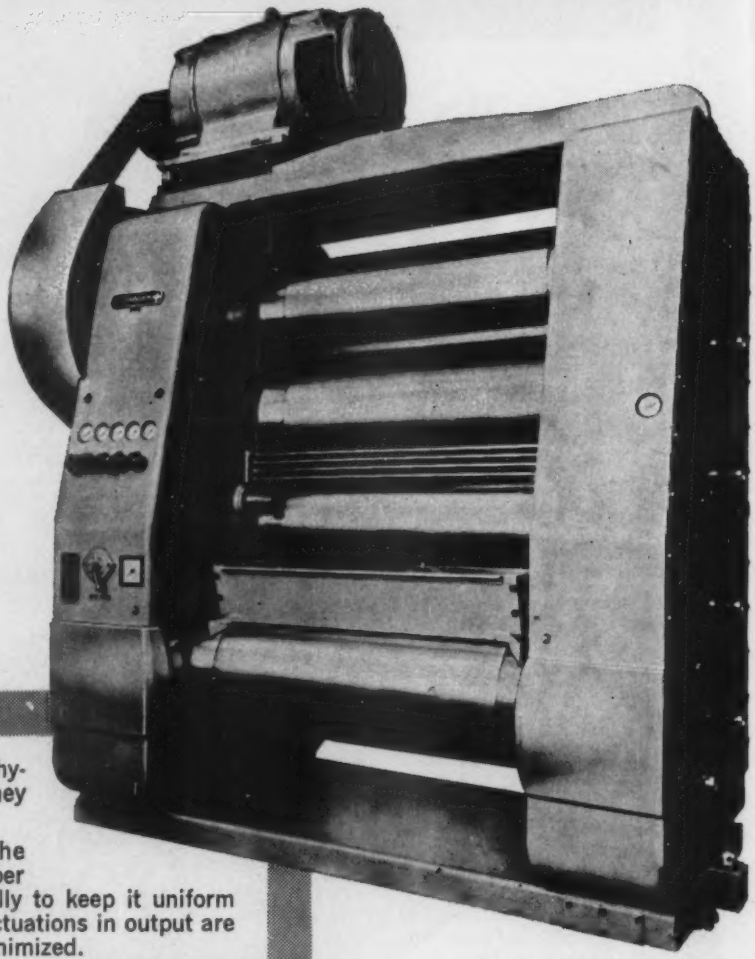

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WRITE FOR LITERATURE

PMCA PRODUCTION CONFERENCE

Antioxidants in food packaging materials

(A Condensation)

by BEN N. STUCKEY
Supervisor Antioxidant Group
Eastman Chemical Products, Inc.

There are three major antioxidants now used in the food field. These are butylated hydroxyanisole, butylated hydroxytoluene and propyl gallate. Practically all commercial formulas are combinations of these antioxidants with or without chelates added as metal scavengers.

The use of antioxidants in the food packaging field has greatly increased in scope during the last few years. This increase has probably been due to better methods of applying the antioxidant to the package, reduction in odor and color forming properties of the antioxidants and successful completion of shelf life tests showing the effectiveness of antioxidant treatment under commercial conditions.

The effective use of antioxidants in packaging materials to increase shelf life depends on two major factors. First the determining factor for the short shelf life must be oxidative breakdown in the fat itself. In many cases, staleness, moisture pickup, texture loss, and carbohydrate breakdown reduce the shelf life of a product and the inhibition of fat oxidation is only academic. The second factor to be considered is the ratio of the package surface area to fat content of the food. We have found that in many bulk packages we are unable

Your future factory

BY V. P. VICTOR, M.E., P.E.
Consulting Engineer, New York City

This twenty page booklet is a reprint of the five part article that appeared in The Manufacturing Confectioner earlier this year. Mr. Victor has had considerable experience in candy machinery design, process development and factory layout. Chapters in this book include . . .

Financial Planning
Plant Essentials
Preliminary Plant Layout
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to apply sufficient antioxidant to the inner surface of the package to stabilize all of the fat against oxidative breakdown.

Antioxidants are applied to packaging materials in three ways, depending on the type of package. In plain carton stock or chipboard the antioxidant is roll coated onto the sheet from an emulsion after the last calendering operation. Antioxidants are also sprayed onto chipboard stock using a solution of a food packaging approved plasticizer. Antioxidants are added to waxed paper or board by simply adding the antioxidants to the paraffin wax in either the storage tanks or the waxing machines. Polyethylene, cellophane, and other films when used as packaging laminates are treated in a manner similar to that described for chipboard and waxed stock. Antioxidants are added to polyethylene immediately before film extrusion. Cellophane is coated with a dip or spray application using a plasticizer or alcohol as the solvent.

The increase in shelf life which may be expected through the use of antioxidant treated packaging material depends largely on the type of confection, initial stability of fat ingredients, quantity of antioxidant used and storage conditions. Data was obtained on commercially prepared candy bars with a peanut butter filling. The waxed glassine and the chocolate board used in packaging these bars was treated with .1% BHA and .05% BHA, respectively, under commercial conditions. These percentages of antioxidant are based on the weight of the finished sheet. The use of antioxidants in either the board or the waxed glassine liner produced shelf life equal to that obtained by direct addition to the peanut butter filling. We believe this is due to the fact that oil from the peanut butter migrates through the chocolate coating and oxidizes only when it comes in contact with air in the package. The antioxidant in the package permits stabilization of the oil after it reaches the surface. Similar results can be expected in other types of candies.

Conferees: Bob Regan of Anheuser-Busch, Inc., Herb Knechtel of Knechtel Laboratories, and Vince Detrano of Eastern Marketing Associates.

Conferees: John Kruo of Corn Products Sales Co. and Robert Lewis of Henry Heide, Inc.

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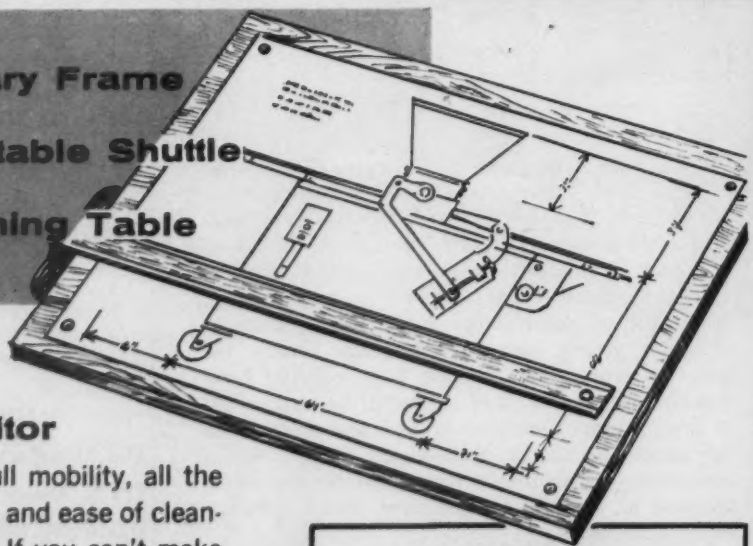

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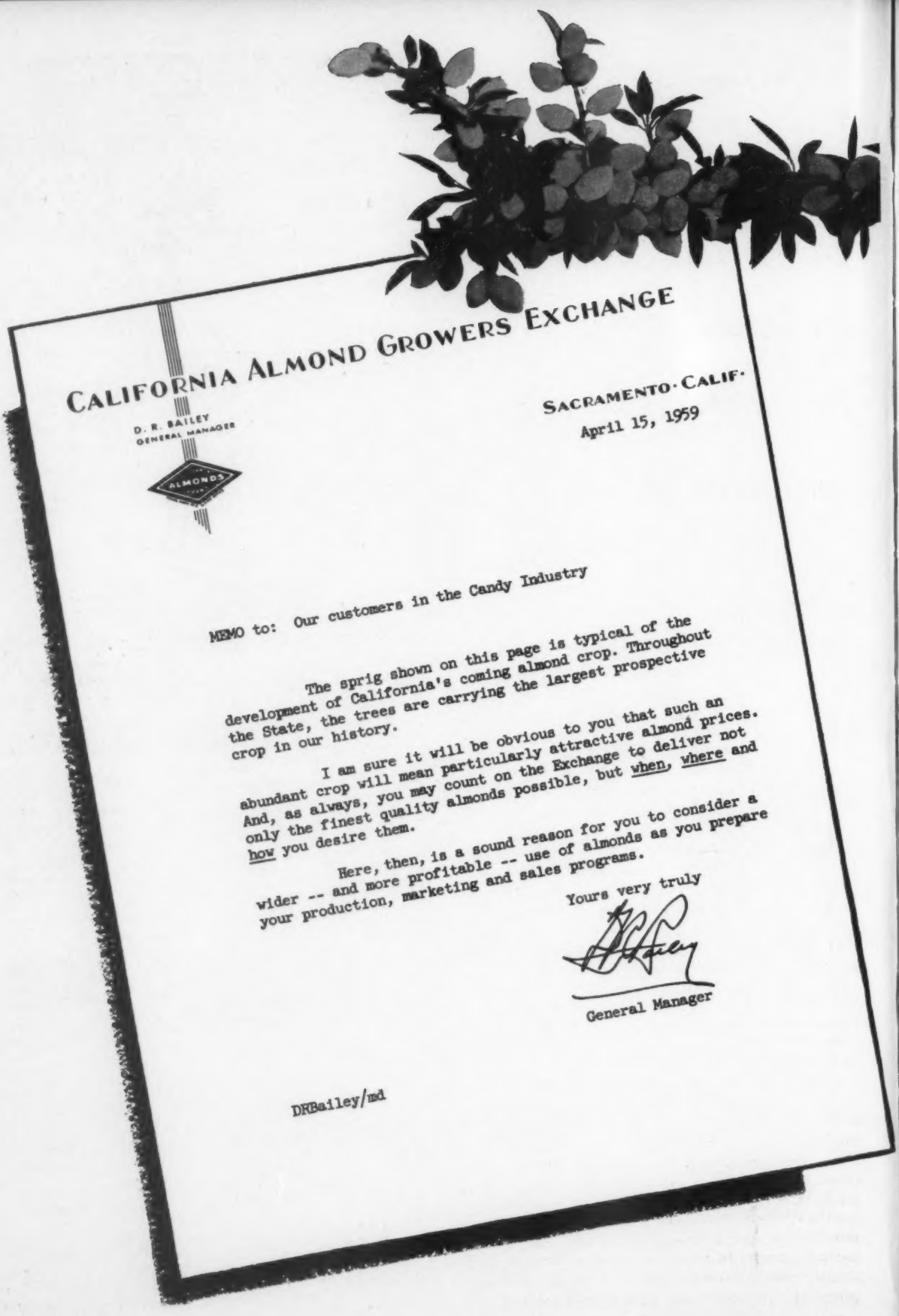

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D. R. BAILEY
GENERAL MANAGER

SACRAMENTO · CALIF.

April 15, 1959

MEMO to: Our customers in the Candy Industry

The sprig shown on this page is typical of the development of California's coming almond crop. Throughout the State, the trees are carrying the largest prospective crop in our history.

I am sure it will be obvious to you that such an abundant crop will mean particularly attractive almond prices. And, as always, you may count on the Exchange to deliver not only the finest quality almonds possible, but when, where and how you desire them.

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General Manager

DRBailey/md

PMCA PRODUCTION CONFERENCE

Insect repellent treatments for packaging applications

(A Condensation)

by RALPH H. KENAN
Technical Service Engineer
St. Regis Paper Co.

The background and development of an insect repellent treated flour bag will be discussed first. Then the significance of these results and possible application to other packages will be covered.

After investigating the flour infestation problem and checking with the appropriate authorities on the subject, we determined that the insects occurring most frequently in flour infestation were the cadelle, saw-toothed grain beetle, confused flour beetle and the lesser grain borer. A test program with 100 lb. multiwall paper bags filled with flour showed that untreated bags were fairly resistant to insect penetration under normal conditions. Under severe infestation conditions such as are encountered in the southern states and tropical regions, the untreated multiwall bag can be entered by the flour infesting insects.

It then became clear that it would be necessary to treat the outside surface of the bag with some insecticide product to obtain our goal of an insect-proof bag. After extensive laboratory evaluations, we found Pyrenone to be far more effective than other insecticides against flour infesting insects under the conditions of treatments adaptable to multiwall bags. Pyrenone is a combination of two insecticides and is made up in the ratio of 10 parts piperonyl butoxide to 1 part pyrethrin. Laboratory tests indicated that a coverage of 50 mg. piperonyl butoxide per square foot plus 5 mg.

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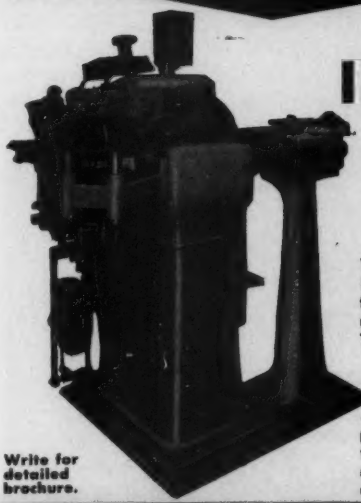
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pyrethrin per sq. ft. was needed for effective protection against insect penetration.

Extensive tests were made to determine a suitable formulation to treat paper on the paper machine. Both a surface coating and an impregnation of paper treatment were applied by commercial machines and fabricated into 100 lb. multi-wall flour bags. The bags were standard four ply bags and the outer ply of the treated bags had 50 mg. piperonyl butoxide and 5 mg. pyrethrins per sq. ft. with the treatment on the outer surface.

The filled bags were placed in steel chests and a large number of cadelles, confused flour beetles or saw-toother beetles were placed on top of the bags along with a small amount of flour for food.

After 8 weeks the following results were obtained:

1. The multiwall bags having the entire outer surface coated with Pyrenone applied under commercial machine conditions were completely resistant to all insects employed in these tests.
2. The type bags having a Pyrenone impregnated outer ply were not completely resistant to insect penetration showing that the surface coating method with the same amount of insecticide was more effective.
3. Part of the treated bags had a heat sealed resin coated sleeve through which the bags were filled before sealing. The cadelle bored through the sleeve showing that plastic coatings are not barriers to boring type insects.

An article in 1948 by Dr. Lehman, Chief of the Division of Pharmocology, U. S. Food and Drug Administration, presented data which indicates that the acute oral toxicity of Pyrenone is negligible. Also, that Pyrenone is not dangerous when applied to the skin. Unused bags from the insect resistance tests were submitted to the U. S. Food and Drug Commission for their analysis. As a result, permission was granted for the use of the desired coverage of Pyrenone as the outer surface on a multiwall paper bag for flour.

The validity of our laboratory test results and commercial shipments was later confirmed by a large scale test under severe infestation conditions at the United States Department of Agriculture Laboratory, Savannah, Georgia. These results showed that Pyrenone treated 50 lb. multiwall paper bags were very effective for nine months of storage but lost most of their effectiveness after a year.

Conclusions and recommendations for insect repellent packaging.

In conclusion, the following basic facts are presented which should be considered in the development of an insect repellent or insect-proof package:

1. Product to be packaged must be free from insects or insect eggs at time of packaging.
2. Many of the infesting insects are not of the boring type and a completely sealed package will prevent insects from entering. It is very difficult to make a completely sealed package as very small openings through closures or glued flaps of boxes would be points of entry. For example, it has been stated that the larvae of

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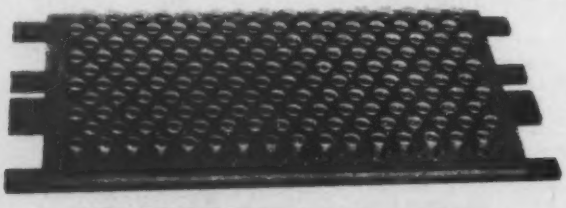

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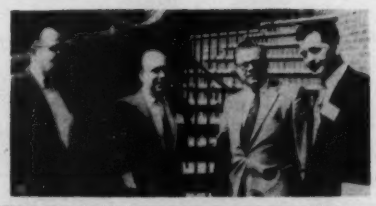
CINCINNATI ALUMINUM MOULD CO.
Dept. M, 1834 Dana Ave., Cincinnati 7, Ohio

Conferees: John Lankenau of Sunshine Biscuits Inc. and Jay C. Musser of Klein Chocolate Company.

the Indian meal moth or the confused flour beetle can pass through a hole .005 inches in width.
3. The use of overwraps such as cellophane or polyethylene would help to make a completely sealed package but the boring type insects can penetrate through the normal packaging materials such as cellophane, polyethylene and paper.
4. The use of Pyrenone coated outer surface and closure points on packages should prevent insects from entering a package. This may be easier said than done in the case of small packages due to limitations of package design, fabrication of package, and closure after the packaging operation. Each type package or packaging operation would have to be studied carefully to determine the practicality of treatment with Pyrenone. If a Pyrenone treatment is used, a coverage equal to 50 mg. piperonyl butoxide per sq. ft. and 5 mg. pyrethrins per sq. ft. is recommended.
5. In many cases, it may be more desirable to treat the outer shipping package if a number of small units are shipped in a container such as a corrugated box. This would be of advantage in protecting small packages during shipment and in storage before being placed on shelves However, the limitations of corrugated boxes are well known as corners and flaps are usually not adequately sealed to prevent entry of insects.

It can be readily seen that it is difficult to obtain an insect repellent package but that it is possible using the right techniques.

Conferees: Floyd J. Roses of Curtiss Candy Co., Freeman Everett of Russell Stover Candies and Dr. F. H. Brock of A. E. Staley Mfg. Co.



Conferees: Joseph Greninger of Henry Heide, Inc., Charles Stoffel of Bunte Bros. Chase, Robert Lewis of Henry Heide, Inc. and Robert Molloy of Bunte Bros. Chase.

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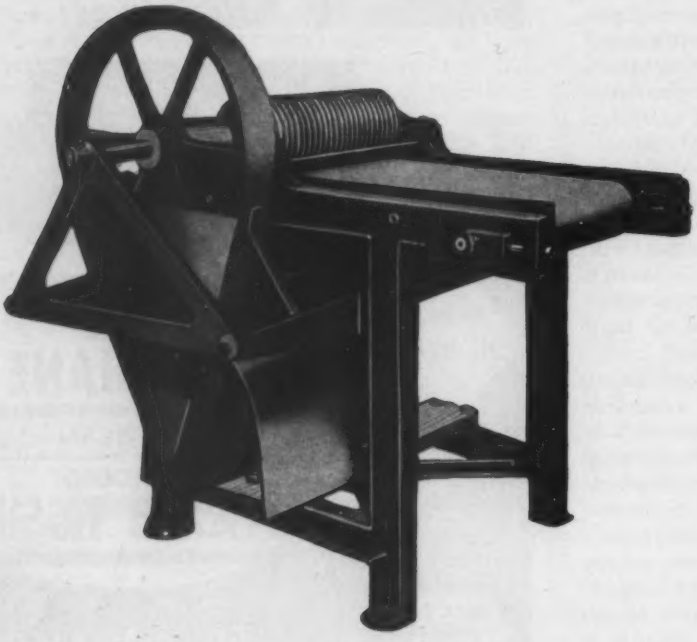


The Savage Improved Candy cutter is the most practical machine for cutting caramel, nougat and cocoanut candies into uniform strips of various thicknesses as desired.

Squares are produced by turning the mat and running through the machine at right angles to the first cutting.

Oblong pieces can be produced by using two of these cutters—one for the narrow cut and the other for the long cut.

The Savage Improved Candy Cutter is substantially constructed. The frames are cast iron. Take-ups are provided for the 20 inch wide white cotton belt and for the hard maple roller under the arbor shaft. The 7 inch diameter knives are hardened and tempered steel with double bevel and are ground and polished. Washers between the knives are cast iron and machined to accurate width. Wood fingers are provided between the knives.

This Cutter is usually arranged for direct motor drive with sprockets and silent chain with 2 H.P. motor. If desired it can be equipped with flat pulley, grooved motor sheave and V belts. Satisfactory guard is provided for the drive and arbor shaft.

The knives and washers can be removed quickly from the arbor shaft when change in cut is desired.

The Savage Improved Candy Cutter requires floor space 48 x 60 inches. Shipping weight: Crated 800 lbs., Boxed 980 lbs.

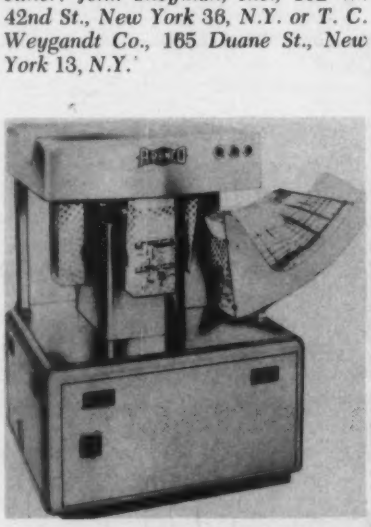
SAVAGE BROTHERS COMPANY

2638 Gladys Ave. Chicago 12, Ill.

New Products

Several innovations have been made on an automatic batch roller, including electrically reversing rollers, a cover that opens from either side without adjustment and a motor drive for the rollers that runs in oil. The machine, which has an independent sizing unit, is manufactured in Western Germany by Hema.

For further information write to either: John Sheffman, Inc., 152 W. 42nd St., New York 36, N.Y. or T. C. Weygandt Co., 165 Duane St., New York 13, N.Y.



An automatic bag feeding and opening machine has been developed which incorporates a feature that prevents possibility of no-fill or double portioning. The machine works in conjunction with weighing and proportioning equipment and takes its running speed from the working speed of the weighers. Should the weighers exceed the speed of the machine the unit automatically controls the filling speed. Output speeds are up to 35 fills per minute and storage

magazine capacity is approximately 300 bags. A number of different types of bags can be used and the unit can be adjusted to different sizes in a matter of minutes.

For further information write: Arenco Machine Co., 25 West 43rd St., New York, N.Y.

A novelty tulip-top container has been developed which makes use of a cluster of artificial leaves as a closure to a transparent acetate container which is 2-34" in diameter and 9" high.

For further information write: Weinman Brothers, Inc., 3260 West Grand Avenue, Chicago 51, Illinois.

Conferees:
Dr. C. Nieman of The Northerland Association of Confectionery and Chocolate Manufacturers and Douglas Steinberg of The National Confectioners Association.

Conferees:
Neil MacEwen of National Starch & Chemical, Horton Corwin of Brock Candy Company, R. H. Williams of DeWitt P. Henry Co. and Harry O. Baker of J. O. Whitten Co.

A specification bulletin is now available which covers all the uses of the Bantam Mikro-Pulverizer. Diagrammatic photographs of the unit and grinding chamber parts are completely explanatory.

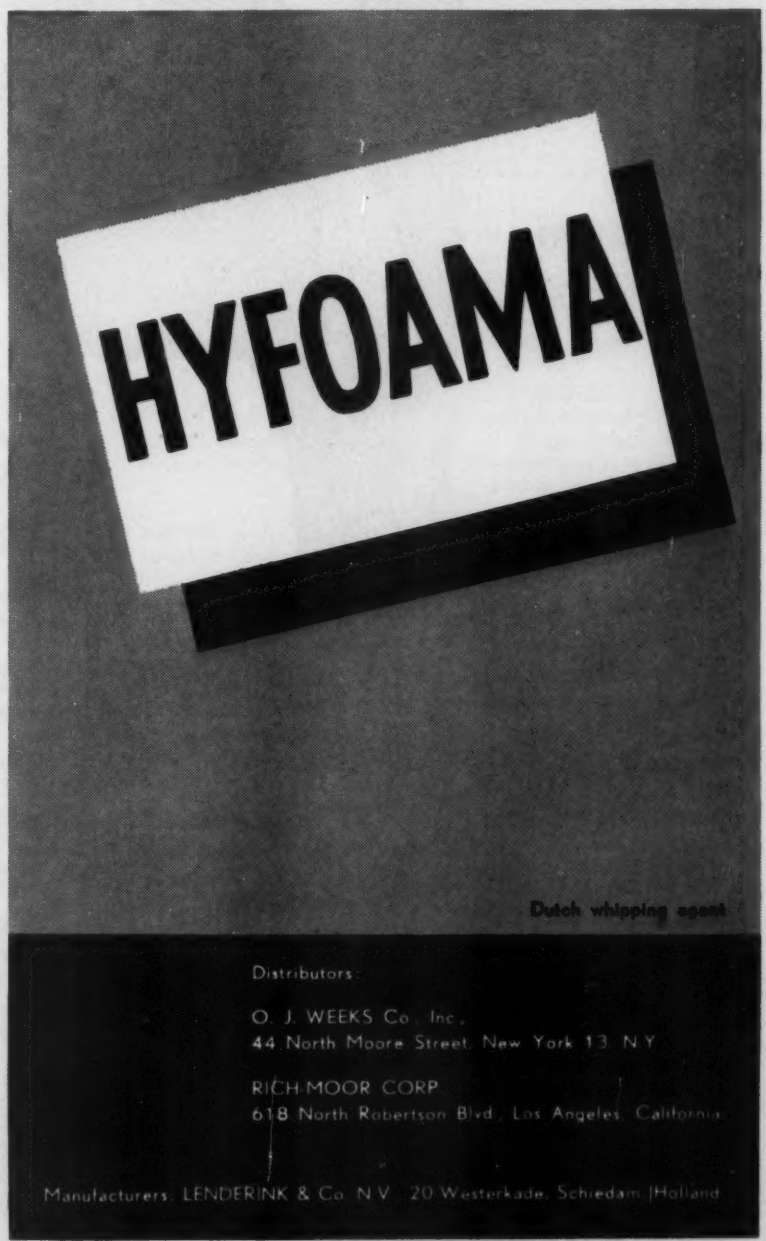
For further information write: Pulverizing Machinery Division, 99 Chatham Road, Summit, N.J.

A formula booklet is now available which contains eighteen formulas of a variety of candies, all of which use egg albumen as an ingredient. Helpful processing information is also given.

For further information write: Ray Owens Company, 3600 W. Irving Park Road, Chicago 18, Illinois.

A new individual piece wrapping machine has been developed that features a speed of 600 per minute. The machine uses less wrapping material than any other method of wrapping; 3-1/4 square inches for a piece 1" x 3/4" x 7/16". A zip tape can be automatically attached to the wrap. The wrap is first formed into a tube and sealed along the edge. Then it is sealed and cut on both sides of the piece in the tube. This results in a tight, neat wrap. The tear tape is applied the long way of the package.

For further information write: Hansella Machinery Corp., Grand & Ruby Aves., Palisades Park, N.J.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Candy Clinic

The Candy Clinic is conducted by one of the most experienced superintendents in the candy industry. Some samples represent a bona-fide purchase in the retail market. Other samples have been submitted by manufacturers desiring this impartial criticism of their candies, thus availing themselves of this valuable service to our subscribers. Any one of these samples may be yours. This series of frank criticisms on well-known branded candies, together with the practical "prescriptions" of our clinical expert, are exclusive features of The MANUFACTURING CONFECTIONER.

Easter Candies; Cordial Cherries

Code 5J9
Chocolate Covered Cordial Cherries
8 ozs.—75¢

(Purchased in a department store, Chicago, Ill.)

Appearance of Package: Good

Container: Slip cover, box oblong shape, one layer type. Top white glazed paper printed in red and green. Imprint of cherries in colors. Bottom of box is red. Cellulose wrapper.

Appearance of Box on opening: Bad, see remarks.

Cherries: 11 cherries with stems.

Coatings: Dark and light

Colors: Good

Gloss: Fair

Taste: Good

Center:

Cordial: Very good

Flavor: Good

Remarks: The best cordial cherries we have examined this year. Three of the cherries were broken and the cordial was all over the box. We know, however, that it is almost impossible to ship this type of cordial cherries without some breakage.

Code 5A9
Milk Chocolate Disc
1⅜ ozs.—10¢

(Purchased in a drug store, Oak Park, Ill.)

Appearance of Disc: Good

Container: Disc is wrapped by machine in gold foil.

Chocolate:

Color: Good

Gloss: Good

Texture: Good

Taste: Good

Remarks: The best milk chocolate piece of this kind we have examined this year.

Code 5I9
Chocolate Covered Cherries In Cream
12 ozs.—49¢

(Purchased in a chain grocery store, Oak Park, Ill.)

Appearance of Package: Good

Container: Oblong box, two layer type, window on top. Printed in red and green. Imprint of cherries in colors. Cellulose wrapper.

Appearance of Box on opening: Good: 20 pieces

Cherries:

Milk Chocolate Coating: Good

Center:

Cherry: Good

Cordial: About 50%, good

Flavor: Poor

Remarks: Suggest a good cherry flavor be used in the center to improve the flavor.

Code 5D9
Hollow Milk Chocolate Lamb
3 ozs.—59¢

(Purchased in a drug store, Oak Park, Ill.)

Appearance of Package: Good

Container: Folding open top box printed in yellow, green, purple and white. Cellulose window.

Lamb:

Chocolate: Good

Molding: Very good

Gloss: Good

Taste: Good

Remarks: The best molded piece of this kind we have examined at this price. A very good container. Lamb was in place and in very good condition.

Code 5F9
Chocolate Covered Cherries
10½ ozs.—59¢

(Purchased in a chain variety store, Chicago, Ill.)

Appearance of Package: Good

Container: Oblong shaped box, two layer type, folding. Top printed in red, green and white. Imprint of cluster of cherries in colors. Cellulose wrapper.

Appearance of Box on opening: Good

Coating: Light: Good for this priced cherry

Center:

Color: Good

Cordial: Very little

Flavor: Poor

Remarks: Suggest a good cherry flavor be added to the center as it lacked flavor.

Candy Clinic Schedule For the Year

JANUARY—Holiday Packages; Hard Candies
FEBRUARY—Chewy Candies; Caramels; Brittles
MARCH—Assorted Chocolates up to $1.15
APRIL—$1.20 and up Chocolates; Chocolate Bars
MAY—Easter Candies; Cordial Cherries
JUNE—Marshmallows; Fudge
AUGUST—Summer Candies
SEPTEMBER—Uncoated & Summer Coated Bars
OCTOBER—Salted Nuts; Gums & Jellies
NOVEMBER—Panned Goods; 1¢ Pieces
DECEMBER—Best Packages and Items of Each Type Considered During the Year.

Code 5E9
Chocolate Coated Fruit & Nut Egg
1⅜ ozs.—10¢

(Purchased in a drug store, Oak Park, Ill.)

Appearance of Package: Good
Container: Folding window box printed in purple, yellow and white.
Egg:
Coating: Good for this priced egg
Center:
Color: Good
Texture: Fair
Taste: Fair
Remarks: We could not find any amount of nuts or fruits. Suggest nuts and fruits be cut in larger pieces.

Code 5G9
Chocolate Covered Nut Chew Bar
1¼ ozs.—5¢

(Sent in for analysis)

Appearance of Bar: Good
Size: Good
Wrapper: Glassine printed in red and white.
Coating: Light; fair
Center:
Color: Good
Texture: Good
Taste: Good
Peanuts: Good
Remarks: A very good eating chewy bar. Good size and should be a good 5¢ seller.

Code 5B9
Chocolate Marshmallow Eggs
5½ ozs.—29¢

(Purchased in a drug store, Oak Park, Ill.)

Appearance of Package: Good
Container: Regular egg carton printed in purple, white and green. Overall print of rabbits and eggs in colors.
Eggs:
Coating: Dark: Good for this priced package
Center:
Color: Good
Texture: Good
Taste: Good
Remarks: The best chocolate coated marshmallow eggs we have examined this year at this price.

Code 5C9
Milk Chocolate Rabbit
1 oz.—10¢

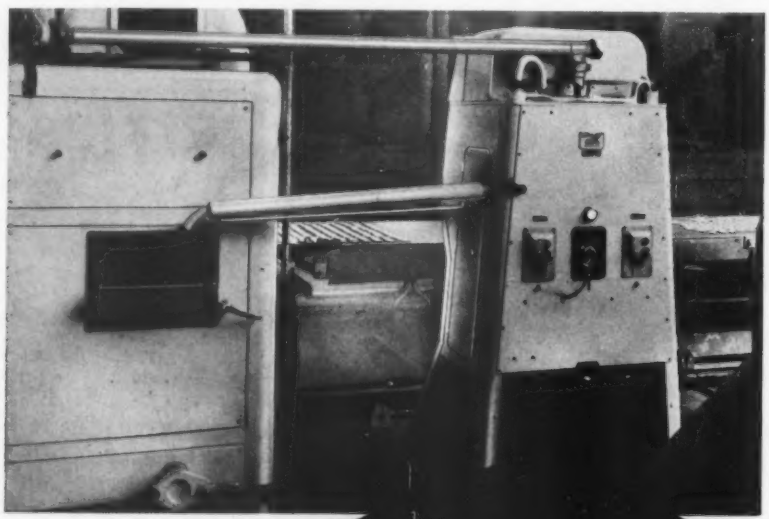
(Purchased in a drug store, Oak Park, Ill.)

Appearance of Package: Good
Container: Standing rabbit in a cellulose bag. Paper clip on top printed in green and yellow.
Rabbit:
Coating: Good
Gloss: Good
Molding: Good
Taste: Good
Remarks: One of the best chocolate rabbits we have examined this year.

Code 5H9
Marshmallow Chicks
2 ozs.—10¢—4 pieces

(Purchased in a drug store, Oak Park, Ill.)

Appearance of Package: Good
Container: Open folding tray, printed in purple, white and yellow. Overall cellulose wrapper.
Chicks:
Color: Good
Molding: Good
Texture: Good
Taste: Good
Remarks: A good looking Easter novelty package, cheaply priced at 10¢.



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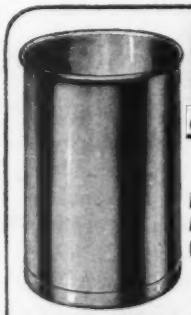

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Helpful Books for Candy Plant Executives

Confectionery Analysis and Composition

by Stroud Jordan and Katheryn E. Langwill

This volume, first published in 1946, is still the only published reference work on the subject of confectionery analysis. It concerns itself with applicable data that covers composition of basic raw materials as well as that of the finished confections in which they have been employed.

Your Future Factory

by V. P. Victor, M.E., P.E.

A twenty page booklet contains the essentials of modern factory planning. It includes plant layout, process design, materials handling, building and structure, production line and financial planning. This is a reprint of the five part article which appeared in The Manufacturing Confectioner in 1958. Mr. Victor is well qualified to advise on factory layout since he has had considerable experience in such planning together with experience in design of candy machinery and process development. He is a consulting engineer with headquarters in New York City.

How to Salvage Scrap Candy

by Wesley H. Childs

This booklet is a complete revision of the author's work "Modern Methods of Candy Scrap Recovery" published in 1943. A considerable amount of information has been collected since that time on methods and techniques of salvaging scrap candy. This booklet covers all types of candy, and gives many practical and economical ways of converting scrap candy into a useful form for re-use.

A Textbook on Candy Making

by Alfred E. Leighton

Here is a textbook where the reader can learn the basic fundamentals of candy making, the "how" and "why" of the various operations in non-technical terms. Particular attention is given to the function of raw materials, and why each is included in a formula.

The Candy Buyers' Directory
The Directory of Candy Brokers

1959 Edition

The Candy Buyers' Directory is an alphabetical and classified directory of wholesale candy manufacturers giving information on what type of candy is made by each firm, and in some cases the type of packaging used. The Directory of Candy Brokers is a geographical listing of over 600 candy brokers giving the accounts that they handle, the territory covered and the number of salesmen.

Profits Through Cost Control

by Frank Buese and Eric Weissenburger

This material deals with the problems of cost control in candy plants including planning for profit. The emphasis is on planning operations so that a profit will be made, and in early detection of those factors which will adversely affect profit.

- ☐ How to Salvage Scrap Candy **$2.00**
- ☐ Your Future Factory **$2.00**
- ☐ A Textbook on Candy Making **$6.00**
- ☐ The Candy Buyers' Directory and The Directory of Candy Brokers **$5.00**
- ☐ Confectionery Analysis and Composition **$6.00**
- ☐ Profits through Cost Control **$2.00**

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CALENDAR

May 17-21; Institute of Food Technologists, convention, Bellevue-Stratford Hotel, Philadelphia, Pa.

May 22-25; Candy Square Club, Outing, Brown's Hotel, Loch Sheldrake, New York.

May 24-27; Super Market Institute Convention, Convention Hall, Atlantic City, N.J.

June 4-5; Manufacturing Confectioners Traffic Conference, semi-annual meeting, Atlanta, Ga.

June 6-8; Confectionery Salesmen's Club of Phila., candy show, Benjamin Franklin Hotel, Philadelphia, Pa.

June 7-11; National Confectioners Assn., Hilton Hotel, Chicago, Ill.

June 7-11; Associated Retail Confectioners, Drake Hotel, Chicago, Ill.

June 8; AACT, annual meeting, Hilton Hotel, Chicago, Ill.

June 11; Northern California Section, AACT.

June 13-16; M.C.B.A., New York Candy Club Exposition, Trade Show Bldg., New York, New York.

June 17; Confectionery Salesmens Club of Baltimore, Inc., annual stag outing, Annapolis Country Club, Annapolis Roads, Md.

June 18-21; Boston Confectionery Salesmen's Club, 14th annual convention, Mount Washington Hotel, Bretton Woods, N.H.

June 25-28 PMCA, annual Convention, Galen Hall, Wernersville, Pa.

June 29-July 2; NCSA convention, Concord Hotel, Lake Kiamesha, N. Y.

July 13-16; Southern Wholesale Confectioners and Tobacco Association, annual convention, Biltmore Hotel, Atlanta, Ga.

July 26-30; NCWA, convention, Palmer House, Chicago, Ill.

August 27-28; Badger Candy Club, 10th Annual Fall Candy Carnival, Astor Hotel, Milwaukee, Wisc.

October 3-8; International Bakers' & Confectioners' Union, 45th exhibition, London, England.

November 1-4; National Automatic Merchandising Association, convention and exhibition, Chicago, Ill.

November 3-5; Canadian National Packaging Exposition, Toronto

November 17-20; Packaging Machinery Manufacturers Institute Show of 1959, New York Coliseum.

1960

April 20-27; Interpack, 2nd international packaging exhibition, Dusseldorf, Germany.

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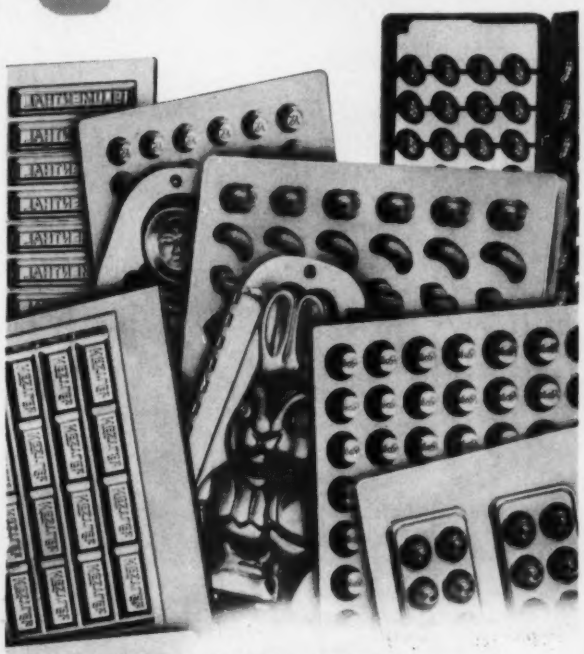

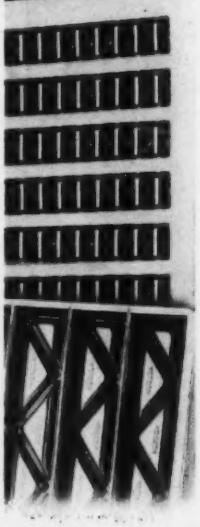

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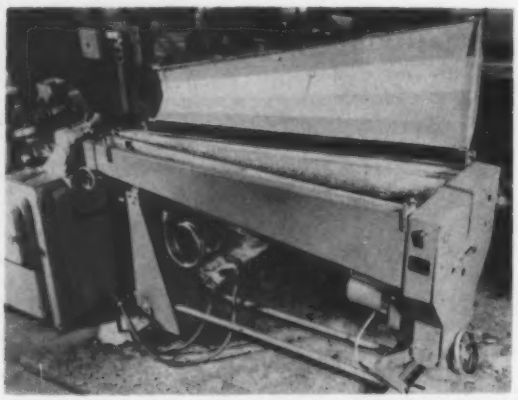

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NEWSMAKERS

Refined Syrups & Sugars, Inc. has appointed **Hugh M. McKay** to the newly created position of general manager. Mr. McKay has been with the company since 1951 and became a member of the board of directors in 1954.

J. W. Greer Company has named **Jack J. Gallagher** regional sales manager of their eastern seaboard operations. Mr. Gallagher will supervise confectionery sales in the area bound by New York, Miami, New Orleans and Pittsburgh.

J. C. Corrigan Company of Boston, manufacturers of conveying systems, have opened a Chicago sales office at 55 E. Washington Street.

Ernest W. Greene, president of The Sugar Association, was recipient of the first "Sugar Man of the Year" trophy awarded by **B. W. Dyer & Company**, sugar economists and brokers. The award was presented on March 26th at the Sugar Club luncheon in New York City.

A. E. Staley Manufacturing Co. has set up a new process service section which will develop and service special processing equipment for the company and for Staley customers. Jet cookers and high-temperature converters developed by Staley for use in applications of Staley products are examples of this type of equipment. **Edward B. Freyfogle** has been appointed manager of this section.

Avisco cellophane will be sold in the Los Angeles and Southern California area by **Mark Mahoney** who joined American Viscose Corporation in August of last year.

Container Corporation of America has announced the appointment of **Samuel F. Leigh** as sales manager of the company's New York national accounts office for folding cartons.

E. F. Drew & Company of New York City has purchased the Malaga Oil Products Co. of Lindsay, Calif. and the Strathmore Oil and Fat Co. of Strathmore, Calif. Strathmore now becomes a wholly owned subsidiary of Drew and will operate as the Strathmore Vegetable Oil Company, Inc. The Lindsay, Calif. company becomes the Malaga Oil Products Division of E. F. Drew & Company.

Chas. Pfizer & Co., Inc. has leased the major part of a 32 story office building to be constructed on 42nd Street in New York City. The building will be called the Pfizer Building and will house the company's international division, domestic sales and service, accounting and financial departments.

George D. Pickett has joined **Western Condensing Company** as technical service representative on all types of lactose for the food industry.

Frank Petrovic has been named plant manager of the **NuCoat Bon Bon Company.** NuCoat manufactures a line of white and colored compound coatings.

Joseph W. Mooney has been appointed senior vice president of **The American Sugar Refining Co.** and **Edward Tindall** was named vice president and general sales manager.

Reynolds Metals Company has named **Ronald M. Ayer** manager of their newly created confectionery, drug and sundries packaging market. Confectionery had previously been a secondary responsibility of other market managers. Mr. Ayer will have his headquarters at Reynold's Richmond, Virginia office.

Hatton B. Rogers, former vice president of Dodge & Olcott, Inc., has been appointed manager of product development for the bulk and institutional division of **The Nestle Company, Inc.**

Mr. Arch Payne has been elected vice president of **Florasynth Laboratories, Inc.** He has been with the company for over thirty years and will retain his present position of general sales manager along with his new duties and responsibilities.

The Du Pont Film Department will expand their sales development and customer service laboratory beginning early in 1960. 23,000 square feet of new floor space will be added to the laboratory and the new facilities will be devoted to work on the many new films Du Pont has developed, including the new K (polymer-coated) types of cellophane.

Clinton Shepperd has been appointed administrative assistant to the president of **The Nestle Company.** In this capacity he will supervise communications between all Nestle associated companies throughout the world and will also be in charge of the firm's public relations. Mr. Shepperd has been with the organization since 1943. Another appointment made by the company moves **Preston T. Reed,** assistant personnel manager, to the position of assistant to the president in matters of organization planning.

Lily-Tulip Cup Corp. has named **Robert J. Hlavin** manager of packaging products and has appointed **D. Lee Mahon** central Midwestern regional manager.

Morningstar-Paisley, Inc. has announced the formation of a new gum and technical products department and has named **Thomas W. Morningstar** general manager and **Mark P. Malkovich** sales manager. The new department will unify operations originally handled by the technical products department and the water-soluble gum department.

A. E. Staley Manufacturing Co. has announced the appointment of **Delmar F. Rentshler** as manager of the refined oil department succeeding Melvin J. Longbons who is retiring. **Eugene R. Weckerly** will take Mr. Rentshler's place as sales manager of refined oil effective June 1.

Foote & Jenks, Jackson, Michigan flavor firm, has named **Stephen J. Dukszta** exclusive representative in the countries of Latin America, and has appointed the **Robert Monrad Company** of Toronto as their exclusive sales and manufacturing agent in Canada.

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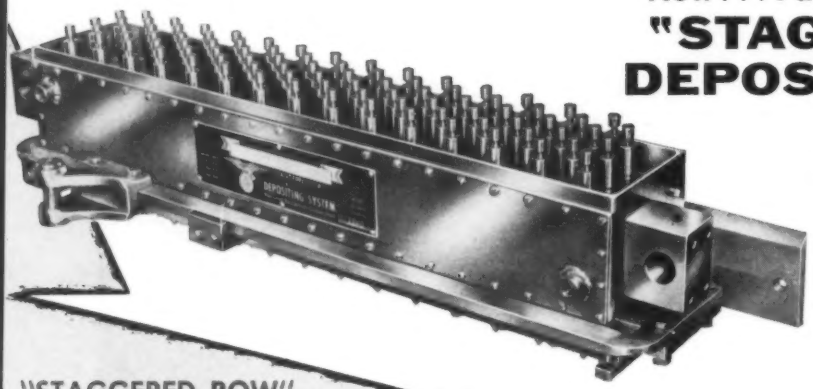

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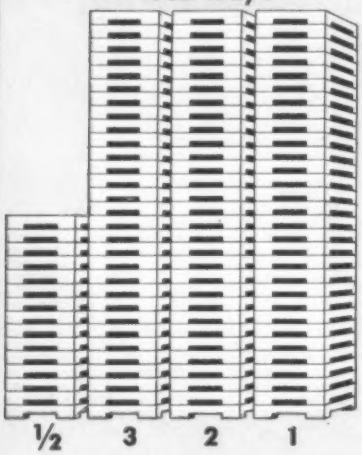

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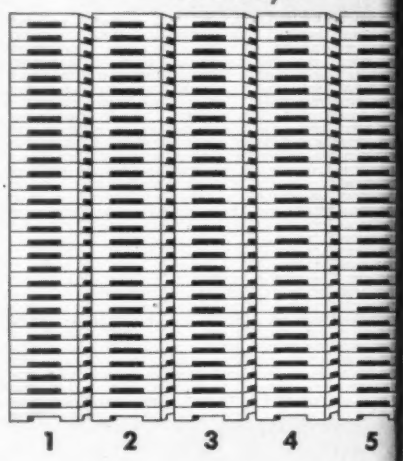

The "STAGGERED ROW" DEPOSITING SYSTEM

- Reduces tray investment
- Saves floor space
- Saves labor
- Increases production
- Reduces operating costs

NOTE:

- More pounds of candy per tray with the same amount of labor.
- More centers per pound of starch.
- More centers for each stroke.
- More trays per minute with the same number of strokes.
- Less strokes required per tray.
- Reduces amount of starch required.
- Reduces the number of starch trays required.
- Less starch drying capacity required.
- Total amount of centers per square foot of floor space is tremendously increased.
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Figaro

By Herb Knechtel

Knechtel Laboratories

Formula — Part I

10 lbs. Vanilla Coating
1 lb. Filbert Paste
1 lb. 92° Vegetable fat
1/2 oz. fine flour salt

Mix this portion thoroughly at about 110° F., temper to 82° F. and spread on paper about 1/2 inch thick.

Part II

10 lbs. Milk Chocolate Coating
1 lb. Filbert Paste
1/2 lb. 92° Vegetable fat
1/2 lb. Egg Frappe
1/2 oz. fine flour salt

Mix this portion except frappe at about 110° F., temper to 82° F., mix in frappe and spread on the first layer above.

The function of the frappe in the second part is to lighten the color of that layer, to provide a greater contrast to the first layer. By dividing the batches, pieces of three, four or more layers can be produced.

The tempering of this type of candy is just as important as for chocolate coating, in order to keep it from blooming.

The melting point of this item is somewhat lower than for chocolate coating. Therefore, this is primarily a cool weather item. However, it can be foil or cello wrapped. This will help it keep its shape during a short exposure to warm weather, and will allow it to harden again to its former shape when cool. For warm weather this piece can be coated giving it the same resistance to warmth as any coated piece. For summer, pastel coatings can be very attractive.

The cooled slab of candy must be cut into pieces, and this can only be done satisfactorily with a wire-cut apparatus. Equipment of this type has been sold from time to time, usually in the range of $150 to $200. These machines are all made just for one size, and a different machine must be on hand for every size.

It is generally most satisfactory for a confectioner to make his own wire cut machine, as it can then be tailored to his particular size requirements. We will give plans and instructions for the making of a simple wire cut apparatus in our June issue.

Safety awards presented

The National Safety Council has presented Peter Paul, Inc., Dallas, Texas plant with a plaque for a number one rank in the 1958 safety contest. Peter Paul, Inc., Naugatuck, Conn. also received a certificate commending their reduction of injury frequency rate in 1958. A Safety Contest certificate of merit went to the Nestle Co., Inc., Fulton, New York, for a number three rank and Hershey Corp., Hershey, Pennsylvania received an injury reduction certificate.

NCA convention theme

"Candy Sales Unlimited" is the theme adopted by the program committee for the 76th annual convention of the National Confectioners Association. Some of the talks which program chairman, Victor H. Gies, Mars, Inc., promises will "give ideas and viewpoints that every company can put into action", are: "The Economies of Automatic Packaging" by Arthur Harris, president of Mead-Atlanta Paper Co.; "How Buying Committees Operate", Frank Graf, executive vice president of A. C. Nielsen Co., and "A New Approach to Individual Marketing" by Whit Hobbs, vice-president, Batten, Barton, Durstine & Osborn, one of the nation's largest advertising agencies.

Mars presents awards

Two juvenile entertainers received awards from Mars, Inc. as a result of a balloting conducted among 2,000 members of the theatrical press. The awards were presented to Patty McCormack, who appeared in the movie "Kathy O" and Jerry Mathers, who is Beaver Cleaver in "Leave It To Beaver" ABC-TV.

Barton exec speaker

Herbert Tenzer, chairman of the board of Barton's Candy Corp., will be a featured speaker at the New England Retail Confectioners Outing on May 18-19 in Northampton, Massachusetts.

Steinberg lists NCA goals

Calling for organized action from the confectionery industry, Douglas Steinberg, president of the National Confectioners Association, stated that the fact that dollar sales of confectionery were up four percent in 1958 was not meaningful in view of the downward trend in per capita consumption that has been going on since 1944 until the slight rise in 1957. In his speech before the New England Confectioners Association on April 15th in Boston, Mr. Steinberg emphasized the role of the NCA in making more Americans candy-conscious, in helping the industry solve its problems of lag in research, the profit-margin squeeze, and discriminating legislation, together with its long range goal of changing these present problems into positive programs of action and advancement.

Simon I. Leon dead

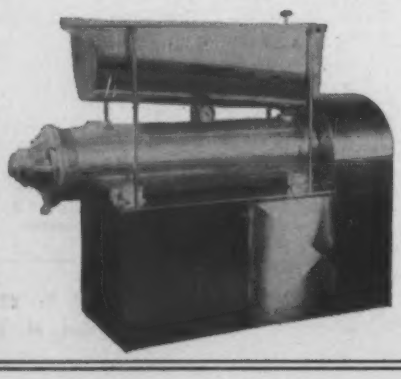
Simon I. Leon, author of the recently published book, *Encyclopedia of Candy and Ice Cream Making*, died on March 29th at the age of 66. Mr. Leon operated his own candy factory in Philadelphia from 1940 to 1952 and later taught candy-making in an adult education program in that town.

Salesmen hold candy show

The Confectionery Salesmen's Club of Philadelphia has taken over the entire fourth floor of the Benjamin Franklin Hotel in Philadelphia for their 6th annual candy show. The affair will be held on June 6th, 7th and 8th and approximately 175 manufacturers will be represented.

Chocolate bunnies on TV

Through the efforts of the Retail Candy Store Institute a family of chocolate Easter bunnies was among the feature prizes offered on "The Price Is Right", ABC-TV, March 23rd.



You're invited to Booth 25 at the NCA Exhibition to see the Master Model Instant and Continuous Fondant machine.

To those who cannot attend you're invited to send for full information.

CONFECTION MACHINE SALES CO.
407 S. DEARBORN ST., Chicago 5, Ill.

Please send information on the Master Model and the new "400" model, to

Name_____

Company_____

Street_____

City_____ State_____

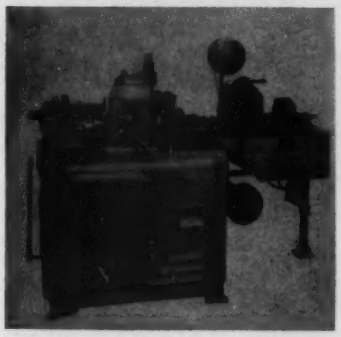
There's profit in pops when you use the Latini

Conservatively, 100 boxes per hour* of 120 count

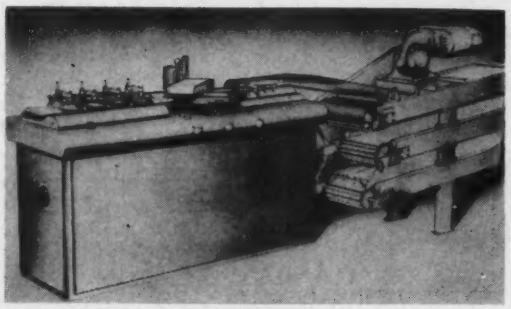
A second Latini unit can be operated by the same person

*based on a 50-minute hour

Latini Die Pop Machine with Wrapping Attachment



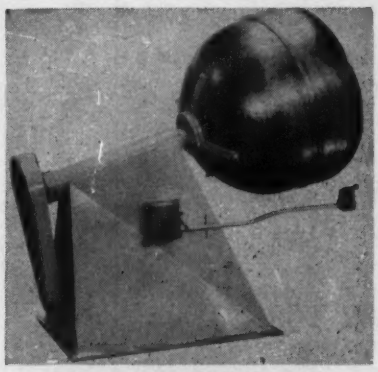
225 Pops Formed and Wrapped Per Minute
No handling between forming and wrapping
Eliminates breakage and labor.



M.F.P. STICK-MASTER

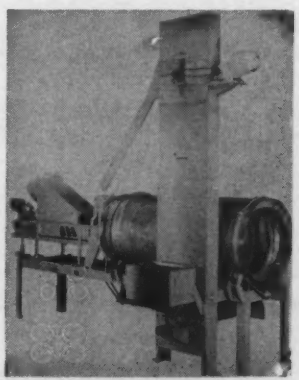
(Pat. Pending)

Integrated Sizer & Twister with electronic speed control.
Flexible — Diameters for ¼" to 1¼"; length from 4" to 16".
Productive — up to 1500 inches per minute.
Sanitary — Stainless steel finish — Candy always in sight.



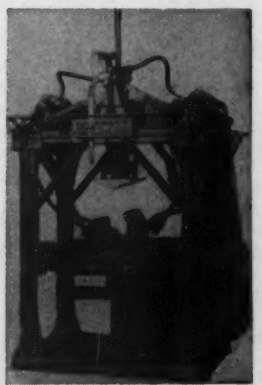
LATINI REVOLVING PAN

Unusual Bowl Shape Permits 10 to 15% Larger Charges
Heavy Gauge Bowl, and Sturdy Construction Insure Service Life
Motor and Drive Enclosed in Sanitary Stand
Bowl Shaft Mounted on Oversized Self Aligning Bearings



The Latini Sander

Guaranteed to properly sand the full output of a mogul! Enlarged steaming chamber. Non-corrosive metals wherever steam and sugar meet.



BERKS MIXER

The Berks mixer incorporates color and flavor and kneads the candy the same as by hand. No discoloration. Over 50 users with from one to fifteen units — over 300 in operation.

Representative: *John Sheffman, Inc.* • **152 W. 42nd STREET NEW YORK 36, N. Y.**

The MANUFACTURING CONFECTIONER'S Clearing House

MACHINERY FOR SALE

FOR SALE

Bonus Cluster Machine
Model S # 3 Savage Fire Mixers.
20 gal. & 50 gal. Model F-6 Savage Tilting
Mixers, copper kettle.
200 lb. Savage Oval Top Marshmallow Beaters.
Cut-Rol Cream Center Machines.
Triumph Candy Depositor
Bostonian Friend Hand Roll Machine
50" two cylinder Werner Beater.
1000 lb. Werner Syrup Cooler.
150 lb. to 500 lb. Chocolate Melters
24" and 32" N.E. Enrobers.
Simplex Gas Vacuum Cooker.
Simplex Steam Vacuum Cooker.
Savage Cream Vacuum Cooler.
600 lb. Continuous Vacuum Cooker.
Form 3 Hildreth Pullers.
6' and 7' York Batch Rollers.
National Model AB Steel Mogul.
National Wood Starch Buck.
Bausman Twin Disc Refiner Unit.
Ball and Dayton Cream Beaters.
100 gal. Copper Mixing Kettle with Double Action Agitator.
Hudson Sharp Wrapper Model 2W6-179
350 lb. cap. Resco chocolate melting and tempering kettle.
Savage and Racine Caramel Cutters
We guarantee completely rebuilt.

SAVAGE BROS. CO.
2636 Gladys Ave. Chicago 12, Ill.

---

1 Hudson Sharp model 2W6 with electric eye. Box 3596, **The MANUFACTURING CONFECTIONER.**

For sale: Simplex gas-fired vacuum cooker; 3 ft., 4 ft., 5 ft. cream beaters; 50 to 300 lb. chocolate melters; gas stoves; cut roll and Friend cream center machines; pulling machines; York batch rollers; steam jacketed agitating kettles; water cooled slabs; marbles; Hobart & Reed vertical beaters; candy packing wheel; copper kettles; guillotine caramel cutting machine and other items. You will find it worth while to check our prices first. S. Z. Candy Machinery Co., 1140 N. American St., Philadelphia, Pa.

Kiss wrapper—late model K. Wraps both cellophane and wax. Used only three seasons. Write Henry Lahage, 40 Shore Garden Road, Hull, Massachusetts.

Hohberger continuous cooker, up to 2,000 lbs. per hour, with pre-cook kettles; Werner twin beater (two cylinders) with motor and drive; RA Lynch wrapper with roll-card feed; Greer 500 lb. kettle. Box 5593, **The MANUFACTURING CONFECTIONER.**

Small heavy duty factory puller 3 Ph. motor $250.00; 25 lb. display puller like new $295.00; forced draft furnace $50.00; National chocolate melter 200 lb. with 3 phase motor $200.00, 150 lb. size single phase motor $175.00, 100 lb. size $95.00; N.E. Depositor pump bars 20 and 24 row $75.00 each; Racine sucker frame rolls hard goods mix $150.00; 50 lb. tilting steam jacketed copper kettle $65.00; Mills bench type (circular knives) candy cutter $95.00. A. Massarella, Box 1571, Ft. Lauderdale, Florida.

Simplex gas fire cooker; FA2Q Package Machinery wrapper; DF bar wrapper with eye and magazine feed; steel mogul with stacker and feeder. Box 5594, **The MANUFACTURING CONFECTIONER.**

Hudson Sharp 2W6, electric eye, straight-in feed; Simplex steam vacuum cooker; Hayssen 7-17 package wrapper with eye. Box 5595, **The MANUFACTURING CONFECTIONER.**

HELP WANTED

Wanted candy plant superintendent and assistant superintendent. Must be well experienced with volume production of all major confectionery items. Write giving complete experience, age and salary required. Box 5591, **The MANUFACTURING CONFECTIONER.**

Experienced enrober supervisor, capable of taking charge of chocolate coating, depositing and moulding department. Must be familiar with handling various chocolates and compounds. Box 5592, **The MANUFACTURING CONFECTIONER.**

WILL BUY. . .

Any kind of inedible cocoa residues, such as cocoa shells, cocoa dust, expeller cake, powder, coating, liquor, butter, or any fat-containing material.

(ESTABLISHED 1873)

Woodward & Dickerson

1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA.
PHONE: LOcust 4-5600; TELETYPE PH109

MACHINERY WANTED

Package Machinery GH2 Model for wrapping bars. Please advise price and where machinery can be seen. Box 4592, **The MANUFACTURING CONFECTIONER.**

SITUATION WANTED

Esq. available to take charge of chewing gum base department and general candy pan line. To this I will add that I have my own formula for synthetic chichly gum base which took me five years of research work. Also I will go in foreign countries to teach all this. Box 1286, **The MANUFACTURING CONFECTIONER.**

MISCELLANEOUS

For sale; Up to date candy factory plus 5 bedroom house next to factory. Built of sturdy concrete and brick in 1945. Excellent condition throughout, fully equipped, in profitable operation. Sells to top chains and jobbers, open shop, no help problems, best and cleanest factory possible. Floor space 8,000 sq. feet. Manufacturer of large quantity peanut brittle, peco flake, candy canes, candy baskets, suckers, large and small. This is a first rate opportunity. Cost $150,000 will sacrifice for $85,000. Owner must sell due to other financial losses not fault of candy factory. Investigate this outstanding buy. Owner would also consider a salesman or candymaker as partner. For this $12,000 to $15,000 cash necessary. Lecas Candy Mfg., Co., Pana, Ill.

Checkerboard candy box. A license is available for a copyrighted candy box with a checkerboard printed on the cover. General or exclusive license is available. Write Mr. Louis Schwartzberg, P. O. Box 6202, 433 W. Van Buren St., Chicago 80, Ill.

COCOA CAKE
COCOA POWDER
COCOA BUTTER
Buy or Sell

ESTABLISHED 1873

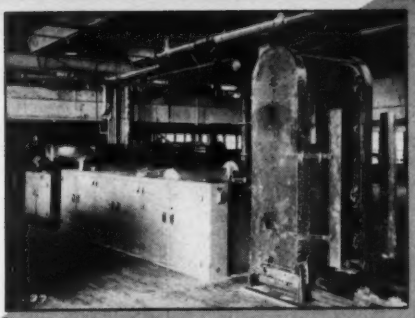
Woodward & Dickerson

1400 SOUTH PENN SQUARE, PHILADELPHIA 2, PA.
PHONE LOcust 4-5600, TELETYPE PH109

Ultra Modern CANDY MACHINERY

Secured From Recent Liquidations

AT TREMENDOUS SAVINGS!



Very latest National Equipment M-100 Automatic, Streamlined, Heavy Duty Steel Mogul with D-100 Depositor. Ball bearings, forced feed lubrication, entirely framed with covers, explosion proof motors. Also with Currie Automatic Loader and Currie Automatic Stacker.

Huhn Double Starch Dryer and Cooler with all interconnecting conveyors to operate with Mogul automatically.

OVER 5,000 MACHINES IN STOCK

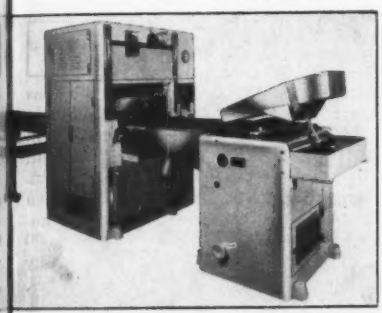
Rebuilt and Guaranteed To Operate Like New

- **EVERY TYPE**
- **EVERY SIZE**
- **FOR EVERY NEED**

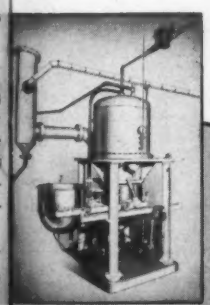
We can supply you with a stove and kettle to make 25 lb. batches, or the latest Continuous Cooker which will produce 2,500 lbs. of clear, high gloss hard candy per hour. We have a complete stock of Enrobers of all widths, from a 6 inch width belt up to a 50 inch width belt. For centers, we have Moguls and Depositors of all types. We also have mixing kettles of every size, to manufacture caramel, nougat, marshmallow, jelly, creams, etc., as well as cutting equipment for non cast centers.

We have hundreds of high speed wrapping machines in stock to wrap single candies, all sizes of bars and to overwrap all sizes of packages.

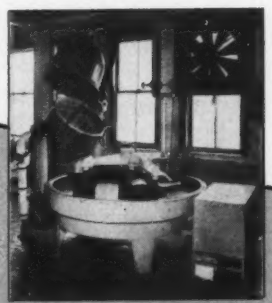
Whatever your machinery requirements may be . . . we have the machine to fill your need.



tional Equipment 24" Bon Bon Enrober. Used less an 1 year. All parts which come in contact with e coating material are made of stainless steel. vailable with new machine guarantee. Also 24" nd 32" latest style Standard Streamlined Enrobers hand.



tional Equipment high eed high-gloss Continu- Hard Candy Vacuum ker. 600 to 2,500 lbs. urly production.



Simplex Late Model High Dome Steam Jacketed two-way Copper, Tilting, Cream Vacuum Cooker emptying into Ball 5 ft. Cream Beater.

Write, wire or phone collect for details and for our special low prices and also, to arrange to inspect this equipment.

Immediate Deliveries

All offerings are subject to prior sale

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Rebuilt Machinery

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New York 12, N. Y.
Canal 6-5333-4-5-6

167 North May St.
Chicago, Illinois
Seely 3-7845

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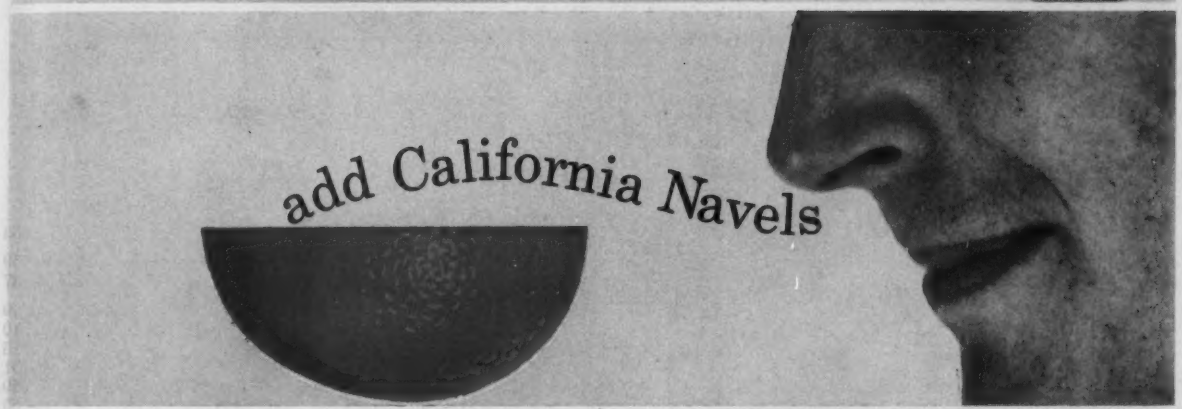

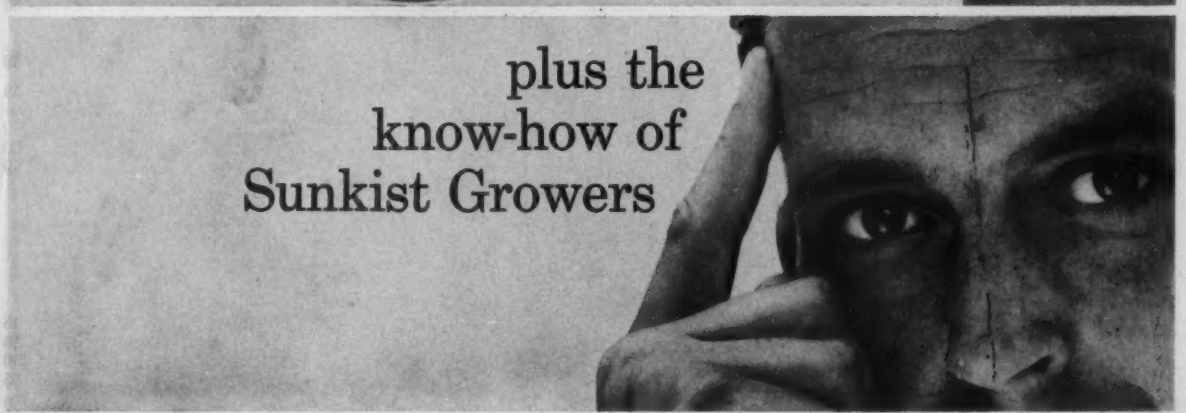

to make the best orange oil for you!

It takes just the right proportion of the rich oil of flavorful California Valencias ...plus the aromatic oils of deep-colored navels...*and* the unmatched experience and skill of the Sunkist Growers in citrus product manufacture, to produce the best orange oil for you – Exchange Brand, U.S.P.

Precisely blended... identical in quality and strength, batch after batch... Exchange Brand Orange Oil is insurance that your products will maintain superiority batch after batch, year after year.

Ask your distributor for Exchange Brand Orange Oil – in the sealed container. It adds so little to the cost of finished goods, you cannot afford to pay less.

Exchange Brand

Orange Oil U.S.P.

California Cold-pressed

Sunkist Growers

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161 Avenue of the Americas,
New York 13, N.Y.

Inquiries from countries other than U.S. and Canada should be directed to Sunkist Growers, Products Sales Department.

Valley Fresh Sweet Dairy Whey—high quality dairy ingredie

Now–improve

FLAVOR FRESHNESS

and lower your ingredient costs

Give your candy products the lasting flavor freshness, the superior texture and taste that build consumer demand. Put Valley Fresh Sweet Dairy Whey to work for you.

This 100% dairy ingredient is your most economical source of lactose (milk sugar) and lactalbumin protein...helps control graining-out...prevents excessive sweetness. You can add these nutritious parts of milk to your present formula, use as a replacement for other dairy solids or to replace a portion of the sugar content.

And Valley Fresh Sweet Dairy Whey offers you this important extra: technical knowledge. At your disposal are the skill and experience of the world's largest whey products manufacturer.

Send for the facts and figures on Valley Fresh Sweet Dairy Whey today. For candy bulletins, and information on the many other Western food ingredients, write Technical Service, Department 15E.

Valley Fresh

WESTERN CONDENSING COMPANY

Appleton, Wisconsin

World's Largest Producer of Whey Products